Appendix A

Comments Received on the Environmental Review

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Part I – Comments Received During Scoping

On September 22, 2005, the U.S. Nuclear Regulatory Commission (NRC) published a Notice of Intent in the *Federal Register* (Volume 70, page 55635) to notify the public of the NRC staff's intent to prepare a plant-specific supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, to support the renewal application for the Oyster Creek Nuclear Generating Station (OCNGS) operating license and to conduct scoping. The plant-specific supplement to the GEIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) guidance, and Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51). As outlined by NEPA, the NRC initiated the scoping process with the issuance of the *Federal Register* Notice. The NRC invited the applicant; Federal, State, and local government agencies; Native American Tribal organizations; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings and/or by submitting written suggestions and comments no later than November 25, 2005.

The scoping process included two public scoping meetings that were held at the Quality Inn in Toms River, New Jersey, on November 1, 2005. More than 100 members of the public attended the meetings. Both sessions began with NRC staff members providing a brief overview of the license renewal process and the NEPA process. After the NRC's prepared statements, the meetings were open for public comments. Thirty-three attendees provided oral statements that were recorded and transcribed by a certified court reporter. The meeting transcripts are an attachment to the December 8, 2005, Scoping Meeting Summary. In addition to the comments received during the public meetings, three comment letters were received by the NRC in response to the Notice of Intent.

At the conclusion of the scoping period, the NRC staff and its contractors reviewed the transcripts and all letters to identify specific comments and issues. Each set of comments from a given commenter was given a unique identifier (Commenter ID), so that each set of comments from a commenter could be traced back to the transcript or letter by which the comments were submitted. Specific comments were numbered sequentially within each comment set. Several commenters submitted comments through multiple sources (e.g., afternoon and evening scoping meetings). All of the comments received and the NRC staff responses are included in the OCNGS Scoping Summary Report dated March 21, 2006.

Appendix A

Table A.1 identifies the individuals who provided comments applicable to the environmental review and the Commenter ID associated with each person's set(s) of comments. The individuals are listed in the order in which they spoke at the public meeting, and in alphabetical order for the comments received by letter or e-mail. To maintain consistency with the Scoping Summary Report, the unique identifier used in that report for each set of comments is retained in this appendix.

Specific comments were categorized and consolidated by topic. Comments with similar specific objectives were combined to capture the common essential issues raised by the commenters. The comments fall into one of the following general groups:

- Specific comments that address environmental issues within the purview of the NRC environmental regulations related to license renewal. These comments address Category 1 or Category 2 issues or issues that were not addressed in the GEIS. They also address alternatives and related Federal actions.

- General comments (1) in support of or opposed to nuclear power or license renewal or (2) on the renewal process, the NRC's regulations, and the regulatory process. These comments may or may not be specifically related to the OCNGS license renewal application.

- Questions that do not provide new information.

- Specific comments that address issues that do not fall within or are specifically excluded from the purview of NRC environmental regulations related to license renewal. These comments typically address issues such as the need for power, emergency preparedness, security, current operational safety issues, and safety issues related to operation during the renewal period.

Comments applicable to this environmental review and the NRC staff's responses are summarized in this appendix. The parenthetical alphanumeric identifier after each comment refers to the comment set (Commenter ID) and the comment number. This information, which was extracted from the OCNGS Scoping Summary Report, is provided for the convenience of those interested in the scoping comments applicable to this environmental review. The comments that are general or outside the scope of the environmental review for OCNGS are not included here. More detail regarding the disposition of general or inapplicable comments can be found in the Scoping Summary Report. The Agencywide Document Access and Management System (ADAMS) accession number for the Scoping Summary Report is ML060530691. This accession number is provided to facilitate access to the document through the Public Electronic Reading Room (ADAMS) (http://www.nrc.gov/reading-rm.html).

Table A-1. Individuals Providing Comments During Scoping Comment Period

Commenter ID	Commenter	Affiliation (If Stated)	Comment Source [a]
OS-A	Tom Jackson		Scoping Meeting
OS-B	Mike Mercurio	St. Francis Environmental Ministry	Scoping Meeting
OS-C	Ed Frydendahl		Scoping Meeting
OS-D	Don Warren		Scoping Meeting
OS-E	J. Simonair		Scoping Meeting
OS-F	Ed Stroup	International Brotherhood of Electrical Workers Local 1289	Scoping Meeting
OS-G	Bud Swenson	AmerGen Energy Company, LLC	Scoping Meeting
OS-H	Fred Polaski	Exelon	Scoping Meeting
OS-I	Tom Cervasio	EnviroWatch	Scoping Meeting
OS-J	Wayne Romberg		Scoping Meeting
OS-K	Judith Cambria		Scoping Meeting
OS-L	Bud Thoman	International Brotherhood of Electrical Workers Local 94	Scoping Meeting
OS-M	Chip Gerrity		Scoping Meeting
OS-N	Don Williams		Scoping Meeting
OS-O	Nancy Eriksen	Natural Resource Education Foundation	Scoping Meeting
OS-P	Paula Gotsch	Grandmothers, Mothers, and More for Energy Safety	Scoping Meeting
OS-Q	Suzanne Leta	New Jersey Public Interest Research Group	Scoping Meeting
OS-R	Kelly McNicholas	Sierra Club	Scoping Meeting
OS-S	Chris Tryon		Scoping Meeting
OS-T	Jay Vouglitois		Scoping Meeting
OS-U	Terry Matthews		Scoping Meeting
OS-V	Roberto Weinmann		Scoping Meeting
OS-W	Ed Hogan, Sr.	Concerned Citizens for America	Scoping Meeting
OS-X	Ed Hogan, Jr.	Concerned Citizens for America	Scoping Meeting
OS-Y	Rod Sterling		Scoping Meeting
OS-Z	David Most		Scoping Meeting
OS-AA	Peggi Sturmfels	New Jersey Environmental Federation	Scoping Meeting
OS-AB	Jeffrey Brown		Scoping Meeting
OS-AC	Jennifer M. Watley		Scoping Meeting
OS-AD	Ron Watson		Scoping Meeting
OS-AE	Donald Posey		Scoping Meeting
OS-AF	Judy Moken		Scoping Meeting
OS-AG	Diane Eleneski		Scoping Meeting
OS-AH	Jennifer Sampson, Nicole Simmons	Clean Ocean Action	Letter (ML053120157)
OS-AI	Bob Scro, Michael DeLuca	Barnegat Bay National Estuary Program	Letter (ML053220253)
OS-AJ	Clifford J. Day	U.S. Fish and Wildlife Service	Letter (ML053360432)

(a) The afternoon and evening transcripts can be found under accession number ML053400397.

Comments in this section are grouped in the following categories:

A.1 Comments and Responses

A.1.1 Comments Concerning Surface-Water Quality, Hydrology, and Use

Comment: At other public meetings, some raised questions about our use of chlorine. We do use chlorine to keep the plant's condenser tubes clean and improve the efficiency of the plant. However, it's virtually nondetectable by the time it gets out of the condenser, and it certainly is not toxic to fish or any other living organisms. In addition, we are well below the allowable amounts of chlorine allowed by our discharge permits. (OS-G-9, OS-G-23)

Comment: The issue with chlorination, constantly dumping this chlorine. For the man to make a statement that chlorine is not toxic to fish, I've had an aquarium, and one of the first things you do in an aquarium is you dechlorinate the water before you put it in, or it will kill your fish. Granted, you can dilute it down to quantities that may be acceptable, but to say that it's not having an environmental impact is not – is not correct science. Because of this, this is why I'm focusing my environmental question on, again, the leakage from the plant and the radioactivity from this leakage from this plant. Without a closed-loop system, this extra contamination from Oyster Creek is ending up in our environment, because these leaks aren't all going into controlled areas. These leaks are going into the recirculating cooling-water area because of the design of the plant. So this is an environmental concern that I feel must be taken into consideration when deciding to issue an environmental permit for Oyster Creek in this licensing renewal. (OS-D-10)

Comment: We minimize the use of chlorine as a biocide. And by the way, all power plants that have once-through condensers use biocide. That's – I mean, all over the State, that's the way it is unless you've got a cooling tower. (OS-J-6)

Response: *The release of contaminants to surface-water bodies is a Category 1 issue that has been evaluated in the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS). All effluent discharges are regulated under the provisions of the Clean Water Act and the implementing effluent guidelines, limitations, and standards established by the U.S. Environmental Protection Agency (EPA) and the States. Conditions of discharge for the Oyster Creek Nuclear Generating Station (OCNGS) are specified in its New Jersey Pollutant Discharge Elimination System (NJPDES) permit. The comment provides no new information and will not be evaluated further.*

Comment: The question is, it seems, that the flow of the Forked River may have changed the pattern under which sediments are deposited in the ground of the river and the adjacent lagoons that are along the Forked River. And I think there are navigational and recreational difficulties because of these deposits that don't allow you to get in and out unless you (inaudible) every time. So can something be done and it was done apparently by the plant 10 years ago. The question is, can this be repeated or can something be done about it? (OS-V-1)

Response: *The commenter suggests that station operation has resulted in an altered flow pattern in the Forked River that may be contributing to shoaling at the mouth of the finger canals. The impacts associated with alteration of current patterns due to station operation were considered in the GEIS. Section 4.2.1.2.1 of the GEIS specifically discusses the operation of OCNGS with respect to the impacts associated with the alteration of flow in both Forked River and Oyster Creek. The GEIS states that substantial hydrological and water-quality changes in the Forked River and Oyster Creek resulted in only minor effects in Barnegat Bay. Also according to the GEIS, "changes to current patterns are of small significance if they are localized near the intake and discharge of the power plant and do not alter water use or hydrology in the wider area." Although the U.S. Nuclear Regulatory Commission (NRC) staff does not dispute the possibility that station operation is causing the shoaling and would also do so during the period of extended operation, the NRC staff finds that the GEIS broadly addressed this issue and finds that no new and significant information exists to suggest that the conclusion in the GEIS is no longer valid. In the past, the licensee has periodically dredged portions of the Forked River and Oyster Creek to maintain adequate depth. With respect to future remediation of the shoaling problem, the NRC staff believes that this is outside the scope of its National Environmental Policy Act (NEPA) of 1969 review; nonetheless, the phenomenon will be discussed in the Supplemental Environmental Impact Statement (SEIS).*

A.1.2 Comments Concerning Aquatic Ecology Issues

Comment: The second reason that we sample at Oyster Creek is to protect the environment. We sample the air and the water that leaves the plant to make sure that we have a minimum impact on the environment. We not only meet State and Federal regulations, but often we beat

them. We're extremely proud of our record as a zero-release plant, and we continually improve our operating procedures as we discover new ways to be better environmental stewards. (OS-AC-2)

Comment: I know that the DEP [Department of Environmental Protection] has jurisdiction over their water discharge permit, and I don't know – actually, I'd like to ask how much jurisdiction the NRC [U.S. Nuclear Regulatory Commission] has over that, and whether you actually look at whether Oyster Creek is complying with the Clean Water Act, or if that is simply a matter for the DEP to consider, because it's unclear to me what is the truth in that. I mean, I know the DEP does, but I don't know what the NRC's role is in that. So just to be clear in terms of Oyster Creek's water impact into the local waterways, and to Barnegat Bay, that since Oyster Creek was built in 1969, the plant's operation has really resulted in very far-reaching and long-lasting environmental degradation to nearby waterways, including Forked River, Oyster Creek, and Barnegat Bay. And, unfortunately, as it stands right now, the DEP's draft water permit does let the plant off the hook, and I would hope that the NRC would not do the same, if you do have jurisdiction, any type of jurisdiction over this. (OS-Q-1)

Comment: Chlorine is injected through each of the circulating pumps daily to prevent and remove fouling organisms such as bacteria. Maximum chlorination occurs in the summer months when water temperatures peak and fish eggs and larvae are most abundant in the zooplankton and invertebrate and fish numbers peaks.

1) Chlorine directly kills phyto- and zooplankton entrained in the cooling system and can impact organisms residing in the discharge canal and surrounding waters.

    a) Chlorine begins to be lethal to marine organisms at 0.01 mg/L but tolerance is significantly lowered by high temperatures and physiological condition of the organisms.
    b) OCNGS [Oyster Creek Nuclear Generating Station] has a permitted daily maximum discharge limit of 0.20 mg/L of chlorine into the discharge canal, 20 times higher than the lethal limit of many estuarine organisms including striped bass, mummichogs and bunker. One chlorine related fish kill resulted in the death of 500 Atlantic menhaden in January of 1974.

2) Toxic residual organic compounds (chloramines) are a byproduct of chlorination, which persists in the canal and effluent resulting in long-term exposure to fish and other aquatic organisms residing in the canal and plume area.

3) Radionuclides are released from OCNGS and bioaccumulate throughout the estuarine food web. Reactor-released radionuclides (^{60}Co, ^{137}Cs, and ^{54}Mn) have been detected in water, bottom sediments, benthic marine algae, seagrass, hard clams, blue crabs, bunker, winter flounder, summer flounder, bluefish, and several other fish. Organisms collected near Oyster Creek had the highest levels of radionuclides but detectable levels were found

through out the bay. Recent sediments collected near the discharge canal contained levels of ^{60}Co that were up to 63 times higher than sediments collected at other locations within the Barnegat Bay-Little Egg Harbor estuary.

4) The current NJPDES [New Jersey Pollutant Discharge Elimination System] permit for OCNGS indicates a maximum daily limit of 15 ppm [parts per million] of PAHs [polycyclic aromatic hydrocarbons] can be discharged from 5 of their outfall pipes. The sources of this contaminant are not clear. (OS-AH-4)

Response: *The discharge of nonradioactive contaminants in the cooling water of the station, including chlorine and polycyclic aromatic hydrocarbons (PAHs), is limited by the NJPDES permit. Implementation of the Clean Water Act provisions is the responsibility of the EPA, and the EPA often delegates such authority to the State as is the case with New Jersey. The state of New Jersey, not the NRC, sets the limits of effluents according to the Clean Water Act. This issue was evaluated generically in the GEIS, and absent new and significant information, the NRC staff adopts the conclusions in the GEIS. With respect to nonradioactive contaminants, the comments provide no new information and will not be evaluated further.*

A comment was made concerning bioaccumulation of radionuclides in the estuarine food web. The NRC staff's review of the license renewal application includes an evaluation of offsite releases of radionuclides from OCNGS, including their movement through the food web. The results of this evaluation will be discussed in the SEIS.

Comment: At Oyster Creek we do everything we can to protect the Barnegat Bay. We have a constant focus on planning and executing our work to minimize the impact to the environment. On a day-to-day, hour-to-hour basis, we monitor water temperatures. We regularly take water samples to ensure compliance with regulations. We also coordinate any planned load reductions and shutdowns to avoid the risk to marine life. This practice is often costly, but it's essential to meet our commitment to the environment. Just this past weekend we performed a routine power reduction, and, due to our environmental team, there was no environmental impact. (OS-G-8, OS-G-22)

Comment: The employees at Oyster Creek – and there are about 450 of them – are highly trained and environmentally sensitive. We're a zero-discharge plant. We have modified their turbine cooling-water intake to be fish-friendly with soft sprays to return fish to the environment. Our intake screens are sized to be environmentally friendly. So we've changed some things over the years to make the plant more friendly to the environment. (OS-J-3)

Comment: Our startups and shutdowns, we have worked very hard in the last couple of years to do very slow startups and slow shutdowns, because that's environmentally friendly. And

since we've started doing that, we've had no fish kills as a result. The fish don't like a fast change of temperature. (OS-J-5)

Comment: It's a well-known fact that the best fishing in the area, in Ocean County, is on Route 9 on the Oyster Creek discharge. You can go down there this afternoon and count the fishermen and count the fish they're getting. You know, I anchor my boat. I have an environmentally-friendly sailboat. We anchor it in Oyster Creek. We get blue shell crabs there. We swim there. You know, we feel good about it. (OS-J-8)

Comment: Oyster Creek is also involved in several environmental projects. Most recently, we purchased a boat for the Rutgers Extension Service Clam Restoration Project. The project team is working on reestablishing clam beds in the Barnegat Bay, and the boat will be used to more efficiently implement the restoration of the clam beds and other important environmental projects in the future. (OS-G-11, OS-G-25)

Comment: And anybody that's coming up with these cockeyed stories about, oh, they need water towers, no, they don't need water towers. The system they have is fine. The water flows in, and it flows out, and they do a good job. (OS-N-2)

Comment: I heard a couple of statements made tonight that I feel obligated to correct. One is that Oyster Creek is in violation of the Clean Water Act. That is simply not true. Oyster Creek could not operate today if it was in violation of the Clean Water Act. Oyster Creek currently operates under a New Jersey Pollutant Discharge Elimination System Permit that was issued by the New Jersey Department of Environmental Protection. That would not be possible if they were in violation of the Clean Water Act. That is a false statement.

Secondly, I heard someone say that there are far-reaching and long-lasting environmental degradation occurring due to the operation of the existing once-through cooling system. Well, there was a very thorough independent evaluation of this once-through cooling system that was done prior to the issuance of the permit that I referred to a second ago. The permit was issued in 1994. Before issuing the permit, the DEP hired an independent consultant called Versar to evaluate all of the studies, and there were some 20 years of intensive studies that were done on the cooling system at Oyster Creek. I know because I participated in many of them. If I wasn't actually doing the work, I participated in the design of the studies. I oversaw the hiring of the consultants. I looked over those – their shoulders as they did the work. I'm very familiar with this work. But it's not my opinion that's important. It's the opinion of the independent expert that was hired by the New Jersey Department of Environmental Protection prior to the issuance of the current permit. That independent consultant – Versar – was asked to determine if the existing once-through cooling system complied with Sections 316(a) and (b) of the Clean Water Act. Based upon the results of their review, Versar and the NJDEP, in the permit that they issue, concluded that the continued operation of the Oyster Creek Nuclear

Generating Station at the estimated levels of losses to representative important species populations – and these are the losses due to the impingement and entrainment that you heard people talk about. Continued operation at those levels of losses, without modification to the intake structures and/or operating practices – again, without modification to the intake structure, does not threaten the protection and propagation of balanced indigenous populations in Barnegat Bay. That's a direct quote from the DEP's independent consultant. It's not opinion. It's not AmerGen's or Exelon's opinion.

It's worth noting that Versar, the consultant that the DEP hired, was not shy about asking to have power plants modify their cooling-water intakes. As a matter of fact, a few months before they initiated the evaluation of Oyster Creek, they finished one up on the Salem nuclear generating station. And based upon the results of their evaluation of that cooling system, they called for a 50 percent reduction in cooling-water flow, which is essentially calling for backfitting, closed-cycle cooling. So they weren't afraid to say that Oyster Creek needed to modify their cooling system. But, in fact, they determined the opposite – that it didn't need to be modified. A couple of the other conclusions that they and the DEP came to, that I'd like to share with you, that are contrary to some of the assertions that were made tonight, include – and these are direct quotes. "The losses due to impingement at the Oyster Creek Nuclear Generating Station were of no consequence to the compliance determination." Losses due to impingement of no consequence to the compliance determination. Discharge effects, contrary to the fact that you heard that there is a thermal plume that goes all the way across the bay, causing all kinds of havoc, the DEP's independent consultant concluded, I quote, "Discharge effects are small and localized and have no adverse consequences to Barnegat Bay."

They go on to conclude, I quote, "Based on findings summarized in this report, balanced indigenous populations of Barnegat Bay are protected under Oyster Creek's current operations." I quote, "Plant-related losses at the Oyster Creek Nuclear Generating Station do not adversely impact spawning and nursery functions." I quote, "Plant-related losses at the Oyster Creek Nuclear Generating Station do not adversely affect the estuarine food web of Barnegat Bay." I quote, "Plant-related losses at the Oyster Creek Nuclear Generating Station do not adversely impact the beneficial uses of Barnegat Bay." This is contrary to the comment that I heard a few minutes ago that the alleged degradation of the bay is having a negative impact on the economy. These are not my conclusions. These are the conclusions of an independent expert hired by the Department of Environmental Protection. (OS-T-1, OS-T-2)

Comment: Now we're here to talk about the environment and I had addressed the DEP last week and I read a statement, but I'd like to get a little bit more informal as far as our screen-wash system that actually protects our marine life. I believe that we have a minimal effect on our marine life as far as impingement or entrainment on our screen-wash system. (OS-Z-3)

Comment: So my point being too is I'm a fisherman out in Barnegat Bay. I used to clam when I was a kid. And the only problem that I see out in Barnegat Bay is our limits. Now the state of

New Jersey limits our catch as far as striped bass. Now there was a low with striped bass I would say about 15 years ago, you couldn't barely catch a striped bass because they were pretty much fished out. Well, what happened is the State stepped in and they limited the catch limit. Well now if you look at the population in Barnegat Bay as far as our striped bass population, it's huge. I mean we're catching alligators out there and it's great. And our weakfish are the same.

So my point to the people that are saying that Oyster Creek has a negative effect on Barnegat Bay, I totally disagree with them because if that was a fact, they would never come back. Now as far as our clams, I used to clam for a living too. And I remember Cattrell's – remember Cattrell's in Waretown? Well, we used to go clamming and everybody knows where the batting ring is when baseball players put a batting ring on a bat to make it heavier. Well, these clams, you'd have to fit the clams through a batting ring and they would consider them a cherrystone. Well, when I was a kid, that's what we used to do to make a living. We used to actually clam, and we'd drop the clams off at Cattrell's and the clams used to fit through the batting ring and they were considered cherrystone. You'd get more money for cherrystones. But through the years, as our area has developed in Lacey Township, along with all our neighboring towns, the population has just exploded. So what happens to our clams? They get fished out. So we need time to let them reproduce, and I'm confident in time that our clam population will increase as well as our striped bass and our weakfish. (OS-Z-6)

Comment: In the environmental area, I'm proud to say that during the last refueling outage, we shut the plant down, performed the refueling, and restarted the plant with zero impact to the environment. And that's because of being good stewards of taking the time and getting the people involved from the chemistry organizations to the outside organizations to analyze the plant's impact to the environment and implementing that into the scheduling itself. So we took additional time to shut the plant down. We had people stationed out at the discharge canal and we had zero impact on the fish and the marine life out there. So that proves to me that Oyster Creek is a good steward, and it should be relicensed for another 20 years. (OS-AE-2)

Comment: Environmentally, I'm a local in Ocean County. I know firsthand people who fish right around the plant. They say they've never caught such big fish in their life, or crabs for that matter and none of them I've seen who I've known through the years and I've been here for years, none of them have come down with cancer, none of them are turning green and none of them are glowing in the dark. That's one thing I can say. And the gentleman from Forked River who's lived here for his life and he's in the Republican Party, he's told you that he sees more bass in the bay, that's probably due to conservation, but one thing you can say it's not because Oyster Creek is destroying those fish. If anything, it's helping those fish spawn. (OS-X-3)

Response: *The comments are, in general, supportive of the existing once-through cooling system of OCNGS, and no specific response is provided. The SEIS will address the impacts of the once-through cooling system as well as those associated with an alternative closed-cycle system.*

Comment: It's common knowledge that the state of New Jersey and the DEP is trying to force them to build a cooling tower. The cooling tower, according to my understanding, is not under the NRC, that you are actually reviewing it based on the approved method of operation. So the question is, is this cooling tower or what amounts to blackmail, they're asking for 3500 acres in order for the State to give them this water commitment separate from you? What impact does that have on your environmental statement? (OS-U-1)

Response: *The NRC's responsibility under NEPA is to provide a fair and comprehensive analysis of potential impacts related to the proposed action, to evaluate alternatives, and suggest mitigation if deemed necessary. Approval of a cooling-system design is the responsibility of the EPA, which has delegated that responsibility to the state of New Jersey. The NRC will evaluate the impacts of the existing once-through cooling system as well as those associated with an alternative closed-cycle cooling system, and an alternative that includes modifications to the existing system and wetland restoration.*

Comment: So even as of 1981, the technology that existed then, one of the areas from time to time was the water purification section – (inaudible) recovery towers, (inaudible) recovery towers, various aspects. And when the water was discharged into the (inaudible) River, which occurred in most of the (inaudible) – the by, the ocean – (inaudible) tanks (inaudible) clean water as of (inaudible). Now, we had found earlier, based on (inaudible), that both Federal and State organizations (inaudible) that the Hope Creek, New Jersey, atomic power plant (inaudible). And now (inaudible), we had a (inaudible) recovery time and (inaudible). I'm not aware of a fish kill at (inaudible) Creek. At the Oyster Creek facility, to my knowledge, (inaudible). But I'm aware of (inaudible) not one, but three massive fish kills. We have learned today that the Oyster Creek facility still does not have (inaudible). We have heard from two gentlemen – this surprised me – that they are environmentally conscious. They are conscious of (inaudible). The discharge site needs further work. We need a water cooler (inaudible) there on the discharge site. We do not need these fish kills anymore. Part of the renewal process for this license should be a consideration of a coolant tower should be built. (inaudible) one at Hope Creek. We need one at Oyster Creek. (OS-A-1)

Response: *Although, unfortunately, much of the comment was not captured in the transcript, the NRC staff believes that the commenter intended to express concern about fish kills that resulted from plant operations and to suggest that conversion to a closed-cycle cooling system using a cooling tower would be advisable. In the SEIS, the NRC staff will consider the effects of converting to a closed-cycle cooling system at OCNGS.*

Comment: Oyster Creek's present water and intake system destroys marine life. In the year 2002, the plant was fined $50,000 for killing 5,876 fish. If the Oyster Creek plant does not construct a cooling tower, the plant will continue to contribute to the loss of habitat in the remaining estuary, so, therefore, the plant should be shut down. (OS-I-6)

Comment: The point I'm trying to make here is they talk about the environmental impact. There's a tremendous environmental impact when Oyster Creek continues to operate every day. The fact that they are unwilling to spend the money for a cooling tower, which is exactly what it comes to – everybody has seemed to look at it, including the Environmental Protection Agency, and say this is the best alternative, yet Oyster Creek is looking for the cheaper way out. This is not true community concern. (OS-D-9)

Comment: And I do truly believe that the environmental impact on the aquatic life and overall – not just fish, all others, has been very, very devastating. And we are so overfishing as it is out there, once they get bigger that we need to be able to have as many possible make it to that point, and so they can become part of our food supply. So I'm very concerned about that. (OS-K-2)

Comment: I don't want to see any more fish kills. I saw enough of them. I saw striped bass three and four feet long when I lived in Lacey floating in that creek because of that plume that comes out of there, that hot water. We were told before by somebody from the plant that they add cool water to it. Again, my question to the people at AmerGen – four miles out in Barnegat Bay that plume continues to send warm water out into the bay. You can't tell me that that's not affecting the ecosystem and the environmental condition of Barnegat Bay. And I don't care what kind of an engineer you are, or where you went to school, or what you studied, I'm taking it from a fisherman and an environmentalist who says that warm water should not be shot out there. (OS-C-4)

Comment: The other thing that should be addressed is the fact that the coolant – the cooling of the water into Barnegat Bay can be very easily solved as heat recovery systems can be put in along the area, hydroponics, different areas. Forty years ago, we had a system – we had a bay that was full of life. Today it's – our oceans are 90 percent depleted. (OS-B-5)

Comment: You know, the once-through cooling system that was designed in the 1960s simply isn't sufficient to fix the problems that have been going on for so long in terms of intake and water discharge. You know, to describe – I don't know if anyone has done this yet, so I'm going to do this – I hopefully am not repeating what someone else has already said. But for the public's knowledge, I want to describe how the system works. Essentially, the heated water – excuse me, the – first, the system intakes water from Forked River to cool the reactor, and then the heated water, which is then called thermal pollution, is then discharged into Oyster Creek. And the plant actually intakes and discharges over 1.4 billion gallons of water every day. The

water is taken in at a speed of about 1 to 2,000 cubic feet per second. That's actually the force of a medium-sized river. The chlorine levels in the water are also about 20 times the lethal level of many different types of aquatic life. And there are grates over the intake system, but because the water is flushed in at such a high speed, it creates a very – it's kind of like a giant sucking action, and that brings in an assortment of aquatic life. Some of it is small, some of it is larvae that flows right through the grate, and it's killed in the process of cooling the reactor. And that effect is called entrainment. And then, larger types of aquatic life – and those include sea bass, they include white perch, they also include endangered sea turtles. Although it's great to hear that you're looking at birds, that's an endangered species that, unfortunately, you do not address. Those creatures actually get pinned on the grate and often die from it and/or seriously injured, and that lethal effect is called impingement. So you have entrainment, where water is going through the system, and then you have impingement, when aquatic life is being impinged upon the grate.

So in addition to that, Oyster Creek's daily thermal pollution discharge often spreads a thermal plume, and that can be over a distance of four miles across the bay. It's actually the entire width of the bay. It creates a fry zone for young larvae, and the NRC has actually done studies and indicate that the thermal plume has increased the population of the tropical wood-boring species that, you know, serve kind of as aquatic termites in the area.

So, you know, all of these problems associated with Oyster Creek's water intake and discharge system actually put it in violation of the Clean Water Act, because that specific Act requires the plant to install modern technology that actually fixes the problem, and, fortunately for us, that technology is available. That technology is called a closed-cycle cooling system. There are different types of these types of systems. Oyster Creek will talk about how, you know, it will have more environmental problems than without it, but the reality is that we know – and the DEP has stated this several times – that, in fact, it won't result in any kind of environmental problems. In fact, it will really fix the root cause of the problem, because it actually reduces the amount of water going into a system and being discharged out to the system by over 95 percent. And that's actually the way to solve that particular problem involved with Oyster Creek's environmental record.

So we know, again, that reduces the discharge and intake by over 95 percent, and that actually would save over 13 million fish and shellfish annually, and an estimated tens of millions of additional larvae annually. Unfortunately, the DEP permit right now, it doesn't require the plant to install a closed-cycle cooling system only. Unfortunately, it gives Oyster Creek the option of restoration. If you're going to use restoration, you should use it as a penalty for violating the Clean Water Act for the past 35 years. You should not use it as an alternative to modern technology. That can actually solve the root cause of the problem.

And I would hope that the consideration of this particular issue, and of a closed-cycle cooling system, would be part of the NRC's environmental scoping record, and actually would look at

the DEP's best professional judgment, which is stated, although it – although it allows for restoration, if you take a look at that permit, it says specifically that closed-cycle cooling will actually fix the problem. So that's the first thing I wanted to state on the record. (OS-Q-2)

Comment: In addition to that, I wanted to just again reinforce – I know you look at aquatic life and aquatic ecology. You want to make sure that you're looking very closely at Oyster Creek's intake and discharge. (OS-Q-12)

Comment: However, given our mission, Clean Ocean Action's current focus is on the marine degradations caused by the plant. An immediate and significant issue for the marine environment, linked to the re-licensing, is the renewal of the required pollution discharge permit. Oyster Creek Nuclear is currently operating under a New Jersey Pollution Discharge Elimination System permit (hereinafter "NJPDES permit") that expired in 1999 and has been "administratively extended" by the NJ Department of Environmental Protection (hereinafter "NJDEP"). This permit, originally issued in 1994, is outdated (to say the least) and results in significant harm to the marine environment. Fortunately, new Phase II regulations require implementation of the "best technology available to minimize the adverse environmental impact." Revising the plant's NJPDES permit to comply with Phase II regulations offers one of the most important opportunities to improve Barnegat Bay.

NJDEP is currently drafting a new NJPDES permit, which will implement the new Phase II regulations. This draft permit must be evaluated and viewed as an essential, rare opportunity to substantially improve the marine environment of Barnegat Bay. COA will analyze and comment on the permit application and will work to ensure that the new permit is consistent with federal and state laws, and adequately resolves OCNGS' current marine degradation issues, especially those related to the antiquated once-through cooling system. Put simply, once through cooling water systems cause substantial negative impacts to waterways. OCNGS' current cooling water intake structure causes severe adverse effects on the Barnegat Bay marine environment due to impingement, entrainment, thermal discharge, and chlorination. These impacts, which can be substantially minimized by installing a closed-cycle cooling system, are described below. From the outset, it is important to note, that an extensive scientific literature review has revealed that all available data on impingement and entrainment at the plant are the result of studies performed and/or funded by the Oyster Creek Nuclear Generating Station.

OCNGS currently operates using a once-through cooling system in which approximately 1.4 billion gallons of water passes through daily. OCNGS discharges more water into Barnegat Bay than any other industrial or commercial user. Water is drawn into the plant via the Forked River (Intake Canal) and released via Oyster Creek (Discharge Canal), which drains into Barnegat Bay. Both the river and creek were dredged and the flow of the southern portion of Forked River was actually reversed to accommodate the water needs of the plant. The activities of the plant change the salinity, water temperature and dissolved oxygen levels in and around the facility and release radionuclides that can be detected all the way up the food web.

Specific environmental impacts related to the intake and discharge canals follow. The intake canal produces significant flow velocities depending on the number of circulating pumps in operation. The consequence is both impingement and entrainment of aquatic organisms.

Impingements occur when organisms are too large to pass through the 9.5-mm screens and are trapped against the trash racks and intake screens from the force of the water being pumped from the intake canal.

1) Plant records indicate 32 impingement and 14 mortalities of endangered sea turtles since 1992. These data include the following species specific incidents:
   a) 21 impinged Kemp's Ridley Sea Turtles with 9 mortalities.
   b) 7 impinged Loggerhead Sea Turtles with 2 mortalities.
   c) 4 impinged Green Sea Turtles with 1 mortality.
   OCNGS exceeded their annual incidental take in 2004 when 8 juvenile Kemp's Ridley Sea Turtles were impinged and 3 were killed in the 3 month period from July 4 to September 23. An Incidental Take Assessment by the National Marine Fisheries authorized an annual limit of 4 Kemp's Ridley's (with no more than 3 mortalities), 5 Loggerheads (with no more than 2 mortalities) and 2 Green's (no more than 1 mortality).

2) A study conducted from September 1975 through August 1977 reported impingement of 13 million fish and invertebrates during this period.

3) A second study conducted from November 1984 through December 1985 reported impingement of 22 million fish and invertebrates (with 7 million impinged in December 1985 alone).

Entrainments occur when small organisms pass through the 9.5-mm screens and enter the cooling system. These smaller organisms generally consist of plankton and fish and invertebrates in the many early life stages. The facility increases water usage (and thus flow) during the summer months, which coincides with peak concentrations of eggs, larvae and plankton in the water column. A study conducted from September 1975 through August 1977 reported 9.19×10^{13} microzooplankton (<500 µm in size including several species of copepods and clam, snail, worm and barnacle larvae) and 4.24×10^{11} macrozooplankton (>500 µm in size including jellyfish, sand shrimp, grass shrimp, larvae of sandlance and American eels, eggs and larvae of winter flounder, and several crab species.) were entrained during this time period. Once entrained, the organisms are subjected to numerous and potentially fatal insults including:

1) Thermal shock from the sudden increase in water temperature (12–13 °C).
2) Shear and pressure forces from high water velocity and trapped air.
3) Mechanical stress from contact with machinery, pumps, etc.
4) Lethal levels of chlorine injected daily into the condenser section to reduce biofouling.

The once-through cooling system used by OCNGS results in an increase in water temperature (between 22-33 °F) between the intake and discharge canals. Water temperature in the discharge canal can reach 110 °F, which affects the behavior, physiology and habitat utilization of aquatic organisms in the area. The elevated temperature in the discharge canal and surrounding waters induces behavioral changes that have been documented in important managed species such as bluefish, fluke, winter flounder, and tautogs. Some of these behavioral changes include:

1) Avoidance of parts or all of Oyster Creek by certain species during summer and early fall.

2) Attraction to parts or all of Oyster Creek during winter when they should have migrated out of the area due to cold temperatures. Failure to migrate can lead to large-scale mortality (due to thermal shock) when the plant experiences a planned or emergency shut down.
   a) Records from January 1972 through December 1982 reported 2,404,496 fish were killed due to thermal shock including Atlantic menhaden, bay anchovy, bluefish, striped bass and weakfish.
   b) An emergency shutdown on January 21, 2000 caused a 17 °F drop in the water temperature in the discharge canal in 15 minutes. The rapid drop in temperature to 32 °F resulted in the death of about 3500 fish including 2980 striped bass.
   c) An emergency shutdown on November 11, 2001 caused a 70 °F drop in the water temperature in the discharge canal in 15 minutes. The rapid drop in temperature to 48 °F resulted in the death of about 1407 fish.
   d) A scheduled shutdown on September 23, 2002 caused the water in the discharge canal to increase to 101 °F in less than an hour and resulted in the death of about 6000 fish. AmerGen recently reached about a $1 million dollar settlement over this incident.

3) Metabolic rate of organisms increases with increased temperatures resulting in decreased growth and survival, especially during summer months when ambient water temperatures are at their peak.

4) High water temperature decreases oxygen solubility in water and increases Biological Oxygen Demand (“BOD”) resulting in dangerously low dissolved oxygen concentrations in the water.

5) Tropical/subtropical invasive species are able to thrive in the surrounding warm water plume. Two exotic shipworms (*Teredo barschi* and *T. furcifera*) have benefitted from the elevated temperatures with an increase in growth rate and length of breeding season along with reduced winter mortality, which lead to a population increase that has created problems for boat owners in the vicinity of the plume. (OS-AH-2)

Comment: Detectable Impacts of the OCNGS on the Aquatic Community

1) Reduced phytoplankton abundance at the mouth of Oyster Creek compared to other areas in the estuary. These impacts include lower diversity, a 30 percent decrease in gross productivity, a 20 percent decrease in net productivity and a 17.7 percent drop in biomass.

2) Changes in zooplankton abundance with some organisms showing increased abundance at the mouth of Oyster Creek than in the discharge canal (barnacle and polychaete larvae) while others showed a decrease in abundance (rotifers, snail larvae).

3) Reduced ichthyoplankton abundance in Oyster Creek compared to Forked River including eggs, larvae and juveniles of bay anchovy and goby and pipefish larvae.

4) The overall production loss of sand-shrimp due to impingement and entrainment associated mortality resulted in a direct population loss of 16.6 percent and an estimated annual net predator loss of 7,483 kg associated with the reduced forage production.

5) Economic loss of about 1 percent of potential hard clam fishery.

The above individual impacts need to be examined from an ecosystem perspective, including cumulative effects, to fully appreciate the overall effect of OCNGS on the surrounding habitat. Ecosystems level impacts include:

1) Impacts at the base of the food web (phytoplankton, zooplankton and ichthyoplankton) affect higher trophic levels with reduced prey availability and/or changes in preferred prey type.

2) Impacts on sensitive life stages such as eggs, larvae and spawning adults have obvious population-level effects.

3) Changes in water quality and temperature induce physiological stress to organisms that utilize the surrounding habitat. Physiological stress can confound the effects of other insults present in the Barnegat Bay estuary such as eutrophication and contaminant exposure.

4) Peak abundance of organisms coincides with increased water usage and chlorination by OCNGS, thus maximizing their impact on the aquatic community.

Because of the numerous adverse impacts cited above, OCNGS' antiquated once-through cooling system must be replaced with a closed-cycle cooling system for OCNGS to continue operations. The abuse of the Forked River and Barnegat Bay waters must be eliminated. (OS-AH-5)

Comment: Under new EPA regulations, OCNGS will be required to comply with Phase II regulations upon the imminent renewal of its NJDPES permit. Since OCNGS' NJPDES permit expired in 1999, the renewal of its permit will hinge on compliance with Phase II regulations.

Phase II Regulations implement Section 316(b) of the Clean Water Act (CWA). Section 316(b) of the CWA requires that the "location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact" (emphasis added).

Phase II Regulations mandate that OCNGS upgrade its system to meet specific performance standard requirements. The performance standards require a decrease in fish mortality due to impingement by 80-95 percent and a reduction in entrainment by 60-90 percent (depending on total capacity utilization rates)." An existing facility may choose one of five compliance alternatives for establishing the best technology available for minimizing adverse environmental impacts at the site.

COA finds, and strongly urges, that OCNGS install a closed-circuit-cooling system because such systems are the "best technology available for minimizing adverse environmental impacts." Any other option simply does not reflect the best technology available for minimizing adverse environmental impacts. Habitat restoration or reductions in the performance standards due to a cost-benefit analysis are particularly inadequate alternatives. In fact, a study of the restoration project at Salem Nuclear Power Plant has shown that such restoration projects do not offset the loss due to the impingement and entrainment of marine organisms. Meeting the best technology available requirement is not only the law, but is also sound and reasonable.

It is also important to note that it is highly unlikely that OCNGS would be located where it is today if it were to comply with current siting laws. The Nuclear Regulatory Commission laws now state that "special precautions should be planned if a reactor is to be located at a site where a significant quantity of radioactive effluent might accidentally flow into nearby streams or rivers or might find ready access to underground water tables." However, special precautions were not taken to ensure against such accidents during the siting of OCNGS.

In short, COA will be urging the NJDEP, as it drafts the NJPDES permit for OCNGS, to mandate the installation of a closed-cycle cooling system as a matter of law, good governance, and good neighbor policy.

1) The law requires implementation of the "best technology available for minimizing adverse environmental impact."

2) Good governance requires protection of public resources and the quality of life.

3) A good neighbor enhances a neighborhood's resources and the quality of life. (OS-AH-6)

Comment: During the past 35 years of operation at the OCNGS, there have been significant concerns regarding impingement, entrainment, and thermal impacts on estuarine and marine life. As a result, the Science and Technical Advisory Committee (STAC) of the BBNEP [Barnegat Bay National Estuary Program] convened a meeting on November 1, 2005, and drafted a number of recommendations for submission to the NRC regarding the OCNGS.

1. An independent, scientific body (similar to the National Academy of Science) must be assembled to coordinate and oversee surveys and studies on the impacts of the OCNGS on the Barnegat Bay/Little Egg Harbor estuary.

2. The NRC must require the OCNGS to focus on remediation of its direct impacts on estuarine and marine organisms in the Barnegat Bay/Little Egg Harbor estuary.

3. There have been very few studies of biotic communities in central Barnegat Bay during the past 25-30 years. Additional studies must be conducted in the Barnegat Bay/Little Egg Harbor to accurately assess the impacts of entrainment, impingement, and thermal discharges on estuarine and marine organisms.

4. The use of wetlands restoration as a mitigation measure must not be implemented in place of remediation efforts targeting bay populations and communities of organisms.

Based on the ongoing effects of the OCNGS on the estuarine ecosystem, the NJDEP and the NRC must mandate the implementation of the best available technology for intake structure design and operation of the OCNGS to mitigate impingement and entrainment losses. Section 316(b) of the Clean Water Act requires that the "location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact." This is the position endorsed by the BBNEP and its partners.

The BBNEP strongly recommends that the permit include a condition that charges the BBNEP with the role of the independent scientific body whose purpose is to coordinate research efforts in the Barnegat Bay relating to the effects of the OCNGS. The BBNEP's Comprehensive Conservation and Management Plan (CCMP) recognizes the need for such an entity. Action Item 5.15 of the CCMP charges the BBNEP with establishing this technical group for the examination and coordination of data in order to understand OCNGS's role in the overall ecological health of the bay.

Program partners agree that the BBNEP can and should have the lead role in coordinating and overseeing much-needed surveys and studies regarding OCNGS's effects on the Bamegat Bay ecosystem.

In conclusion, the position of the BBNEP is that regardless of the option pursued by the NRC regarding Oyster Creek's license renewal, without question, the OCNGS absolutely must be

required to conduct detailed, comprehensive studies of the communities of bay organisms to determine what the overall impact of the power plant is on Barnegat Bay. (OS-AI-1)

Comment: The applicant has identified its preferred alternative as renewal of its operating license for an additional 20 years, without any plant modifications. The Service recommends that the applicant re-consider in its alternatives analysis the value to the aquatic environment of constructing a closed-loop cooling system or the employment of other project features (see below) that are designed to avoid or minimize adverse impacts to the aquatic environment. For example, the use of a closed-loop system would reduce intake cooling water volumes, when compared to the preferred alternative, by 90 percent (see the applicant's Environmental Report page 7-19). Such an alternative would avoid many of the adverse environmental impacts that are currently occurring to the aquatic biota of Barnegat Bay (i.e., entrapment, entrainment, and thermal impacts).

The continued operation of the Oyster Creek Nuclear Generating Station poses individual and cumulative impacts on the human environment. The continued use of 1.25 billion gallons of water per day from Barnegat Bay represents an adverse impact to the bay's aquatic biota. The Service does not concur with the applicant's conclusion that the impacts associated with its proposed 20-year license renewal would be small and do not warrant mitigation (see page 6-4 or the applicant's Environmental Report). The intake velocities for plant cooling may approach 5.0 feet per second (fps). These velocities exceed the 0.5 fps criteria established for intake structures by the State (New Jersey Division of Fish, Game and Wildlife, undated). The U.S. Environmental Protection Agency's (EPA) establishment of a 0.5 fps velocity for all new cooling water intake structures that draw from rivers, streams, or ocean waters of the United States (40 CFR Part 125.84 [b][2]) is consistent with the State's requirements. Velocities of intake water that exceed 0.5 fps promote adverse impacts to aquatic resources due to entrapment or entrainment.

The Service recommends that the Draft EIS also include consideration of the following project features as a means to avoid or minimize impacts to the aquatic environment: placement of additional screening/netting or other project features (e.g., bubble or sound deterrent systems) in the intake canal closer to Barnegat Bay; employment of flow reduction options during low peak demands; construction of a large water impoundment or recirculation structure on the Finninger's Farm to supplement the plant's cooling water needs; or a combination of any of the above. (OS-AJ-5)

Response: *The comments, in general, express concern over the impacts on aquatic organisms resulting from the operation of the existing OCNGS once-through cooling system. To operate the station, AmerGen must comply with the Clean Water Act and associated requirements imposed by the State as part of its NJPDES permitting system. OCNGS cannot operate without a valid NJPDES permit. On July 19, 2005, the New Jersey Department of Environmental Protection (NJDEP) issued for comment a draft NJPDES permit for OCNGS.*

The draft permit affords AmerGen two options for demonstrating compliance with the EPA's Phase II regulations found at Title 10, Part 125, Section 125.94(a), of the Code of Federal Regulations (*40 CFR 125.94(a)) for the Clean Water Act, Section 316(b). One option is to reduce intake flow to a level commensurate with the use of a closed-cycle cooling system. The second option is to reduce impingement and entrainment mortality of all life stages of fish and shellfish to the EPA performance standards of 40 CFR 125.94b(1) and (2). The State also has suggested that wetlands restoration is one means of meeting the performance standards. The SEIS for license renewal at OCNGS will evaluate the effects of the existing once-through cooling system as well as the impacts of an alternative closed-cycle cooling system. These evaluations will address impacts related to impingement and entrainment of organisms, cold shock, radiological releases to the aquatic environment, the thermal plume, and other potential or actual impacts. Any impact on Federally protected species also will be addressed in the SEIS. The ongoing NJPDES permitting process will ultimately determine the compliance action taken by OCNGS to meet requirements of the Clean Water Act.*

Comment: The NRC's Draft EIS should document the adverse cumulative impacts that are occurring to the bay's aquatic biota from thermal impacts (cold-water shock and heated water, as discussed below) and from entrapment or entrainment from passing through the circulation and dissipation pumps. Because the data discussed in the applicant's Environmental Report are dated, it is difficult to ascertain the present level of cumulative adverse impacts. In addition, the NRC must consider the cumulative effects on the bay's aquatic environment due to other actions such as mortality from recreational and commercial fishing. Without more relevant biological data on species use of the project area, the Service must conclude that cumulative impacts to the environment are more than minimal. Without meaningful biological data, the NRC's Draft EIS should also conclude that cumulative adverse impacts would continue to occur with the applicant's preferred alternative (license renewal), warranting substantial measures for compensatory mitigation. (OS-AJ-6)

Response: *The SEIS will include a discussion of the cumulative impacts of the cooling system at OCNGS.*

Comment: Earlier this afternoon, a man who is a former employee of the plant talked about the 1994 Versar report regarding Oyster Creek's water intake and discharge. I wanted to state for the record that that report has been discredited and if you take a close look at both what the DEP has said in public, in addition to the draft water permit for the plant, they clearly state that the best available technology is a closed-cycle cooling system that would again reduce the plant's intake and discharge by over 95 percent. (OS-Q-7)

Comment: Now a few minutes ago, the representative from NJPIRG [New Jersey Public Interest Research Group] made a statement that the Versar report has been discredited. Well, I wish she had stayed around because I would very much like to know how the Versar report

was discredited. Who discredited it and where did they discredit it? It was a scientific report. It can't be discredited just by stating that it's discredited. So you can be assured that I will be sending her a letter to get that information, and I'll share with as many of you as I possibly can when I get it. I think the reason she would like it to be discredited is not only because of the conclusion that I just read to you, but they came up with some other significant conclusions regarding the impacts of Oyster Creek. (OS-T-3)

Response: *The comment refers to a report prepared by J.K. Summers et al. of Versar, Inc. entitled* Technical Review and Evaluation of Thermal Effects Studies and Cooling Water Intake Structure Demonstration of Impact for the Oyster Creek Nuclear Generating Station *dated May 1989. The report was prepared by Versar for the NJDEP to summarize the findings and conclusions of Versar's review and evaluation of the OCNGS 316 (Section 316 of the Clean Water Act) demonstration and to make recommendations that would assist the NJDEP in making a Section 316 decision for the OCNGS. As part of the environmental review for the OCNGS license renewal application, the NRC staff will consider the Versar report and its findings.*

Comment: When an agency is evaluating reasonable significant adverse effects on the human environment in an EIS, and information is incomplete or unavailable, the agency shall determine the reasonableness of including that information in an EIS (40 CFR Part 1502.22).

The Service recommends that the NRC postpone the issuance of its Draft EIS (June 2006) until additional ongoing biological studies (which began recently) are completed and information is available to assess plant operational effects on fish and wildlife resources. The results of these studies are essential for assessing potential adverse environmental impacts to the aquatic environment. The overall cost of obtaining this information is not exorbitant, as defined in 40 CFR Part 1502.22 (a) and is necessary to fulfill NEPA [National Environmental Policy Act of 1969] responsibilities to adequately assess individual and cumulative impacts (see cumulative effects discussion below). Information from the biological studies will yield, at a minimum, biomass losses of finfish and crustaceans from the applicant's plant operation and projected adverse impacts to the aquatic environment if the license is renewed.

The applicant's Environmental Report uses biological data derived from a 12-year period (1965 to 1977), to describe aquatic biota found in the project area; however, the age of the data (28 years) limits its value for assessing current and reasonably foreseeable future impacts. The applicant's assertion that the impacts of entrainment of fish and shellfish are "small" (page 4-9) cannot be supported adequately with data that are most likely outdated. In addition, the assertion that impacts are small appears to contradict later statements in the applicant's Environmental Report that numerous unavoidable adverse impacts to the aquatic environment are occurring (page 6-5).

The plant utilizes 1.25 billion gallons of water each day for cooling. Water from Barnegat Bay enters the Forked River, passes through several small, mesh screens and large circulating or dissipating pumps, is heated upwards of 24 degrees Fahrenheit as it passes through the heat dissipation chamber, and is then released into Oyster Creek, eventually flowing back into the bay. This cooling water entraps and entrains an unknown amount of aquatic biota, including egg, larvae, juvenile, and adult finfish and crustaceans. The NJDEP (2005) reported that the Forked River drainage area provides habitat for river herring. The same report indicated that the Upper Branch of the Forked River had a herring spawning run, which no longer exists due to the combined effects of pollution, habitat displacement, man-made water course blockages, and over-fishing. Although not mentioned in the NJDEP report, it appears that Oyster Creek, just south of the Forked River drainage area, may have also lost a herring spawning run after a dam was build on the creek in the 1960s for the purpose of storing water for fire fighting capability at the nuclear plant. The proximity of the Forked River to the plant cooling intake structures makes it likely that any egg larvae or young-of-the-year herring originating from Forked River will pass through the plant's cooling system and be killed before entering Barnegat Bay.

Significant population changes have also occurred to several commercial and recreationally important finfish and shellfish species found in Barnegat Bay since the conclusion of the 12-year biological sampling study in 1977. The population of the hard clam (*Merceneria mercenaria*) and winter flounder (*Pseudopleuronectes americanus*) have dropped precipitously and the localized effects of the intake of over 1 billion gallons of water per day on these two species are unknown. In addition, the Atlantic Coast population of the striped bass (*Marone saxitilis*) has risen sharply from the mid-1980s. Striped bass and other marine species are known to utilize the intake and discharge areas of the project, but the extent of their use is unknown. The economic value of recreational fishing in New Jersey is high (see discussion on public access and recreation below). The effect of the discharge of hot water is unknown on recreational sport fish and other aquatic species. In addition, there have been several confirmed large fish kills due to cold water shock from winter plant closings. The NRC Draft EIS should document these fish kills and discuss the cumulative impacts of these kills in view of the data and available information concerning the aquatic biota that is entrapped on the cooling water intake structures or entrained in the heat dissipation chamber.

Because of the concerns outlined above, the Service [U.S. Fish and Wildlife Service] recommends expansion of the current biological sampling study to a minimum of 3 years. A 3-year study would allow the NRC to more adequately determine what effects, if any, the plant's operation is having on aquatic biota. Obtaining this information does not appear to be cost prohibitive. The Service also recommends review of the current sampling method by the NJDEP, NMFS [National Marine Fisheries Service], Service, and other interested parties to ensure that information gathered will be adequate for assessing impacts to aquatic biota associated with plant operation. The Service also recommends collection of biological data for the life of the license in order to demonstrate that adverse impacts remain minimal over time.

The license should contain conditions to require additional mitigation (see the discussion of mitigation below) should post-license data analysis confirm that additional or unforeseen adverse impacts are occurring. (OS-AJ-7)

Response: *The NRC staff recognizes that the amount and quality of data available for NEPA evaluations sometimes falls short of ideal, but believes that there is sufficient information available to perform an assessment of the impacts of license renewal at OCNGS. The assessment presented in the SEIS will be based on the best available information, drawing from a variety of sources, including data collected by AmerGen, the NJDEP, other governmental agencies, independent researchers, and others. If new and significant information becomes available in the future that demonstrates a significant impact on the aquatic environment as a result of continued station operation, the NRC staff expects the NJDEP to require modifications to the cooling system necessary to protect the resource through the NJPDES permitting process.*

Comment: The CEQ [Council on Environmental Quality] requires inclusion of means to mitigate adverse environmental impacts in the EIS discussion of environmental consequences, if not covered in the description of the proposed action or alternatives (40 CFR Part 1502.16[h]). In addition, a mitigation plan (when necessary) is generally required prior to project authorization by the NJDEP. Therefore, the Service recommends that the NRC develop a mitigation plan for the proposed license renewal and discuss the plan in the Draft EIS. The mitigation plan should be developed in consultation with the NMFS, Service, and NJDEP and identify proposed means to avoid, minimize, and compensate (in that order) all adverse environmental effects on fish and wildlife resources. Consistent with the Service's Mitigation Policy, all in-kind options should be exhausted before considering out-of-kind mitigation. For example, the Service is aware that the NJDEP is considering restoration of several large wetland areas as potential mitigation. Although the Service encourages wetland restoration in most cases, this should only be employed as out-of-kind mitigation after the applicant has exhausted other direct compensatory options for adverse impacts to aquatic organisms (i.e., the removal of fish blockages for river herring or the development of long-term hard clam or other finfish or shellfish restoration projects).

During the October 11-13 interagency scoping meeting, the Service learned that a dam and pond were constructed just below the headwaters of Oyster Creek to store water for fire fighting capability at the plant. From a review of pre-1969 construction aerial photographs of the pond, it appears that Oyster Creek was a functioning waterway capable of supporting fish passage and possibly spawning habitat. Oyster Creek has the potential to offset expected adverse impacts from the proposed license renewal via the construction of a fish ladder. The Service can assist the NRC in identifying other potential fish ladder projects as potential mitigation for the preferred alternative. (OS-AJ-9)

Response: *In Chapter 4 of the SEIS, the NRC staff will present an evaluation of the impacts of license renewal at OCNGS. If it is determined that the impacts of license renewal are not small (as defined in the footnotes to Table B-1 of 10 CFR Part 51, Subpart A, Appendix B), the NRC staff will recommend mitigation to reduce the severity of those impacts. The installation of a fish ladder on the small onsite reservoir located on Oyster Creek was discussed with the licensee and will be addressed in the SEIS.*

A.1.3 Comments Concerning Terrestrial Ecology Issues

Comment: We are a staunch protector of the South Jersey wildlife and natural resources. We support the New Jersey Audubon Society. We've donated a significant amount of money to the organization in recognition for the society's efforts to help rescue and clean waterfowl impacted by the recent oil spills in the Delaware River. (OS-G-12, OS-G-26)

Comment: We also do bird surveys, and we do mammal surveys out at Oyster Creek. That information is given to the DEP, and it's compiled, and we work with the DEP if we need to. We also sponsor bluebird trails. Bluebirds are no longer threatened, but they were at one time, so 10 years ago we put up a bluebird trail and we monitor that to make sure that we were able to bring that population back, which we did, not singlehandedly but we had Ocean County put up bluebird trails. We have wood duck trails, and we have a peregrine falcon tower at the plant. (OS-O-4)

Response: *The comments are, in general, supportive of the licensee's current programs to protect terrestrial resources. No specific response is provided. The impacts of license renewal on terrestrial resources will be discussed in Chapter 4 of the SEIS.*

Comment: I remember when I first moved into my home in Sunrise Beach in Lacey Township, I took my brine tank from my saltwater conditioner and I threw it out on my driveway and some went on my grass. Well, I didn't realize that the salt would kill my grass. Well, the next morning, I woke up my whole lawn was dead. So I suggest don't ever put salt on any plant life. (OS-Z-5)

Response: *The comments are noted. The effects of salt drift from a cooling tower will be addressed in the alternatives section (Chapter 8) of the SEIS.*

Comment: The Service also recommends that the Draft EIS reflect that the Conectiv 230-kV transmission line is active. The applicant's Environmental Report on page 3-6 states that the line has not been constructed. (OS-AJ-4)

Response: *The SEIS will provide a description of the current status of the Conectiv transmission line.*

Comment: The applicant does not propose any new construction activities with the license renewal. However, during the inter-agency meetings noted above, the Service learned that a substantial amount of previously contaminated dredged material, stored in a confined disposal facility (CDF) just east of the plant on the Finninger's Farm property, may require remediation and/or removal to an approved upland facility. A site visit revealed that the farm consists of several abandoned fields; an early successional forest, including some maritime forest species; and pockets of both tidal and non-tidal wetlands. These -types of vegetative cover provide valuable habitats for upland wildlife species. New construction activities (e.g., clearing and grubbing of upland vegetation, upgrading roads, or the construction of an offloading barge facility in Oyster Creek) would be expected if the CDF requires remediation or removal and would impact terrestrial species that utilize the farm. Therefore, the Service recommends clarifying any activities proposed on the Finninger's Farm in the Draft EIS, including construction methods for any remediation of the CDF. (OS-AJ-8)

Response: *The need for remediation of the dredge spoils pile on the Finninger Farm portion of the OCNGS site has not been determined. Should it be determined that remediation is necessary or desired, that action would be subject to a separate environmental review and is not a part of the license renewal process. The current status of the spoils pile will be discussed in the SEIS.*

Comment: The Service also recommends that, in association with implementing best management practices (BMPs), the NRC include provisions to control the spread of invasive species, such as *Phragmites australis* in the transmission line right-of-ways and the CDF on the Finninger's Farm.

A draft Management Plan by the Chesapeake Bay Program's *Phragmites australis* Working Group (2003) includes recommendations to curb the spread of *Phragmites* through federal and state permit conditions, in order to help achieve a long-term goal of no net gain in *Phragmites* acreage. The Service has subsequently recommended initiation of a similar planning effort to control *Phragmites* in the Hackensack Meadowlands in Bergen and Hudson Counties, pursuant to Executive Order 13122 and under the auspices of the National Invasive Species Council. The Service recommends a similar program in the project area, including the two power line right-of-ways maintained by Conectiv and FirstEnergy and the CDF, with participation of the NRC. In the interim, the Service recommends that any federal authorization resulting in wetland disturbance (e.g., power line right-of-way maintenance, dredging, or excavation of the CDF) include conditions requiring: (1) BMPs to prevent the introduction or spread of invasive species, such as avoiding creation of elevated berms and the spread or burial of *Phragmites* rhizomes; (2) 2 to 5 years of post-construction monitoring to detect the introduction or spread of invasive species, and (3) control efforts, if *Phragmites* or another invasive species are detected (to include re-grading or hydrologic corrections for any construction-related disturbances that

promote the spread of *Phragmites*, if other control methods [i.e., herbicides] prove insufficient in the long-term). (OS-AJ-11)

Response: *At this time, there are no planned activities associated with license renewal that would result in the disturbance of wetlands on the OCNGS site or within the transmission line corridor associated with OCNGS. The assessment presented in the SEIS will include an evaluation of the vegetation-management protocols on the site and within associated transmission corridors. This assessment will address the effects of existing protocols on the spread of invasive species and will suggest mitigation if impacts are determined not to be small.*

A.1.4 Comments Concerning Threatened and Endangered Species

Comment: Our employees are trained to do their jobs with environmental protection in mind. One practice that we are particularly proud of is our commitment to protect sea turtles that become caught in our intakes. We have specific procedures in place for the safe return of all sea turtles to their natural environment. Our operators are trained to identify, to remove, and, if need be, resuscitate those turtles. When a sea turtle is found, our operators contact the Brigantine Marine Mammal Stranding Center, which recovers the sea turtle, gives it a checkup, rehabilitates it if necessary, and releases it back to the sea. We also partner with Drexel University to track the number of sea turtles that are rescued from our intake canal. Oyster Creek has modified its intake structures to significantly reduce the impact on aquatic life. Fish and crabs caught in our intake screens are gently returned to the discharge canal, and we pump cool water from the intake canal to the discharge canal, diluting the warmer water coming out of the plant. (OS-G-10, OS-G-24)

Comment: We have a program that trains our operators to rescue sea turtles, and I think you heard about that earlier. When we're unsuccessful, it's generally because that sea turtle got to us injured. Boat propeller is the most frequent injury that we see. And, obviously, when it gets to us cut open from the boat propeller, it's hard to resuscitate them. (OS-J-4)

Comment: If there's a problem with an endangered species, for example, or a threatened species, such as an osprey or – we get seals, we get all kinds of terrapins – we stop work and take care of that animal, whether it's calling other regulatory agencies, if it's calling the DEP to come in and help us, that's what we do. (OS-O-6)

Response: *The comments are noted. They are, in general, supportive of the licensee's activities related to threatened and endangered species. No specific response is provided. The impacts of license renewal on threatened and endangered species will be presented in Chapter 4 of the SEIS.*

Comment: When Oyster Creek was found to be noncompliant with the turtle kills for their intake, speaking of environmental issues, they petitioned to have it increased – the amount that they could kill increased. This is not responsible to the community. This is not responsible to the environment. (OS-D-5)

Comment: Plant records indicate 32 impingement and 14 mortalities of endangered sea turtles since 1992. These data include the following species specific incidents:

5. 21 impinged Kemp's Ridley Sea Turtles with 9 mortalities.
6. 7 impinged Loggerhead Sea Turtles with 2 mortalities.
7. 4 impinged Green Sea Turtles with 1 mortality.

OCNGS exceeded their annual incidental take in 2004 when 8 juvenile Kemp's Ridley Sea Turtles were impinged and 3 were killed in the 3 month period from July 4 to September 23. An Incidental Take Assessment by the National Marine Fisheries authorized an annual limit of 4 Kemp's Ridley's (with no more than 3 mortalities), 5 Loggerheads (with no more than 2 mortalities) and 2 Green's (no more than 1 mortality). (OS-AH-3)

Comment: AmerGen has submitted an application to the Nuclear Regulatory Commission (NRC) to continue operation of its Oyster Creek Nuclear Generating Station for an additional 20 years (the applicant's preferred alternative). The nuclear plant has been in operation since 1969, and its license is due to expire on April 9, 2009. On October 11 through 13, 2005, the Service attended several interagency scoping meetings with the applicant, the NRC, and representatives from the New Jersey Department of Environmental Protection (NJDEP) to discuss the project, current adverse impacts to fish and wildlife resources, and potential plant modifications and other mitigative measures that could offset these impacts. Currently, the power plant withdraws approximately 1.25 billion gallons of water per day from Barnegat Bay to aid in cooling the nuclear reactor. The intake of cooling water entrains and entraps an unknown quantity of aquatic biota from Barnegat Bay. Prior to the scoping meetings, the Service concluded with AmerGen on January 25, 2005 that the continued operation of the plant until 2029 would not adversely affect federally listed threatened and endangered species under Service jurisdiction.

As discussed in the Service's January 25, 2005 letter to AmerGen, except for an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed threatened or endangered species under the Service jurisdiction are known to occur within the project area. Therefore, the Service concluded that the proposed project would not adversely affect federally listed species under Service jurisdiction.

Due to the recent nesting successes of bald eagles in New Jersey, a possibility exists that a pair of eagles could nest on or adjacent to the project area in New Jersey during the NRC's regulatory review or during the life of the renewed license (if approved). The NRC and

AmerGen were notified at the above scoping meetings of the possibility of future eagle nesting. Should nesting occur in the project area during the NRC re-licensing process or during the life of any renewed license, additional consultation pursuant to Section 7 of the ESA [Endangered Species Act] would be necessary. We recommend that the NRC obtain a status update of the bald eagle prior to its approval of any license renewal.

The Service also recommended (not required) in its January 25 letter, that AmerGen retain a qualified botanist to conduct a survey to determine the presence of any rare plants, including the federally listed Knieskern's beaked-rush (*Rhynchospora knieskernii*) and swamp pink (*Helonias bullata*), and the federal candidate bog asphodel (*Narthecium americanum*) in the project area.

These species have been documented within 1.5, 2.8, and 1.3 miles (respectively) of the project area. Since re-licensing is not expected to impact project area wetlands, the Service recommended, rather than required, a botanical survey. To date, the Service is unaware of any botanical survey conducted in the project area. Surveys for the above species would be necessary if any project alternatives or mitigative measures were to involve project area wetlands that might support these species.

No further consultation pursuant to Section 7(a) (2) of the ESA is required with the Service at this time. If project plans change (e.g., to involve project area wetlands) or if new information is obtained that indicates the occurrence of a federally listed species at the proposed project site(s), this determination may be reconsidered. The Service provides the above determination with respect to federally listed or proposed threatened or endangered flora and fauna under the Service jurisdiction only. The proposed project is located on Barnegat Bay and may affect federally listed marine turtles. Principal responsibility for threatened and endangered marine species is vested with the National Marine Fisheries Service (NMFS). We understand that the NRC has begun formal Section 7 consultation with the NMFS. This consultation should be completed prior to the NRC's issuance of the Draft EIS. (OS-AJ-1)

Response: *The comments are noted. The comments relate to the impacts of OCNGS operations on threatened and endangered species and will be considered in the preparation of the SEIS.*

Comment: The Service recommends that the NRC and the applicant continue working with the NJDEP to protect State-listed species and to obtain any other recommendations to modify plant operations to protect resources of State concern. Any mitigation plans should be developed prior to completing the Draft EIS. In addition, any botanical surveys conducted in the project area should include State-listed species. (OS-AJ-2)

Response: *The comment is noted. The comment relates to the impacts of OCNGS operations on State-listed threatened and endangered species. The occurrence of State-listed species on the OCNGS site and associated transmission lines will be presented in Chapter 2 of the SEIS.*

A.1.5 Comments Concerning Air Quality Issues

Comment: They love to say that they don't produce fossil fuels, yet the material that they use, the fuel has to be mined. There's a tremendous amount of fossil fuels that are used in the production to get a plant running and to keep it running. (OS-D-6)

Comment: And stop – it is disingenuous for nuclear people to keep comparing the CO_2 [carbon dioxide] that comes from coal, as if that was the option we're all headed for. And in terms of the CO_2, they are saying that now nuclear is so – you know, that it's going to make our air in New Jersey better, and I said this at another meeting – there are three of the worst coal producers – coal-fed plants in the Midwest that have no safety equipment on them whatsoever in terms of getting the CO_2 out of their refuse there, that go to serve the uranium processing people. So that – and that CO_2 comes from Ohio and Kentucky, and wherever those plants are, right into New Jersey. So we don't need to keep saying that nuclear energy does not produce CO_2, because that's disingenuous. (OS-P-2)

Comment: Oyster Creek provides a tremendous environmental benefit to the community. Oyster Creek represents 20 percent of JCP&L's [Jersey Central Power & Light Company's] electricity needs. Not only do we produce 9 percent of New Jersey's electricity, but we also do this with virtually no greenhouse emissions. Each year we operate Oyster Creek avoids some 7-1/2 million metric tons of carbon dioxide that would have been produced in coastal New Jersey by replacement of a coal plant. That replacement plant would produce carbon emissions equivalent to two million cars, nearly half of all the cars in New Jersey now. The clean air benefits of nuclear power production are of critical importance to New Jersey, the United States, and the world as we look for solutions to the greenhouse gas impacts. (OS-G-6, OS-G-20)

Comment: Oyster Creek, as a nuclear facility, is capable of producing power for over 6000 homes in New Jersey, day or night, wind or no wind, while it produces zero carbon emissions. In fact, we avoid the generation of carbon emissions equivalent to half the cars driven in New Jersey on a given day. (OS-J-2)

Comment: I am for it because of the simple reason that carbon emissions present more of a threat to human life on this planet right now, because of the fact of the amount that we're putting in. The United States puts 2.5 billion tons of carbon just from electric power generation through coal-fired plants. So if you really want to point a finger at what's causing environmental impacts, it's pointed to the coal industry, not to the nuclear regulatory area. (OS-B-6)

Comment: And when you look at, when it comes to diversifying in our fuel mix, because obviously we have to worry about the quality of air in New Jersey, we have predominant winds that blow from the west to the east. We have a lot of coal plants out there. Unfortunately, New Jersey's quality of air is pretty poor, which contributes to childhood diseases such as asthma. So my point being is we have five million cars too, also in the state of New Jersey. So how do we offset that? Well, Oyster Creek doesn't put off an effluent which really contributes positively to our environment. (OS-Z-2)

Response: *Nuclear power contributes substantially fewer carbon dioxide (CO_2) emissions to the atmosphere than fossil-fuel-based energy production methods. CO_2 emissions from various sources of energy will be discussed in the alternatives section (Chapter 8) of the SEIS.*

Comment: So as far as building a cooling tower, when you think about a cooling tower at Oyster Creek, personally, I don't think it's a viable issue. Environmentally, we don't even know the negative effect that a cooling tower could bring to Lacey Township, between all the salinity that pumps out of the stack. (OS-Z-4)

Comment: A cooling tower is a whole different issue around economic investment and whether or not it's the right thing to do. I know as a resident, I don't want a cooling tower. I'm going to have salt spray all over my car and my house, and so on. That's enough for me or my neighbors. (OS-J-7)

Response: *The NRC staff will discuss the impacts associated with closed-cycle cooling, including cooling-tower drift, in the alternatives section (Chapter 8) of the SEIS.*

A.1.6 Comments Concerning Land-Use Issues

Comment: Federal law requires that licensees operating near the coast must adhere to State environmental rules. Oyster Creek does not, so, therefore, the plant should be shut down. (OS-I-5)

Response: *The NRC staff is unaware of any continuing noncompliance with State environmental regulations. The SEIS will address recent past compliance with State requirements.*

Comment: We've also donated land from our Finninger Farm property across the street from the power plant to Lacey Township for preservation. (OS-O-2)

Response: *The comment is noted. The comment does not relate to an impact on the environment, and, therefore, will not be evaluated in the SEIS.*

Comment: Recreational fishing is a $35 billion industry for the nation, with approximately 900,000 New Jersey recreational anglers expending nearly $700 million annually for fishing tackle and other related purchases (U.S. Fish and Wildlife Service and U.S. Census Bureau, 2002). A key component to these economic benefits is unimpeded public access. A federal excise tax is collected from manufacturers of fishing equipment, as well as a portion of the federal fuel tax that is attributed to motorboat usage. Revenue is passed on to participating states. Since 1950, the Service's Federal Aid in Sport Fish Restoration Program has provided funds to state fish and wildlife agencies. The funding is used to restore, conserve, manage, and enhance fish species that are sought by recreational anglers, fund educational programs to enhance the public's understanding of aquatic resources and recreational fishing, and to promote the development of responsible attitudes and ethics toward the aquatic environment.

Currently, recreational anglers fish in areas downstream of the hot water effluent in Oyster Creek. However, the public access points in this area are limited to the State Route 9 Bridge and several small shoreline areas. The Service recommends that the NRC work closely with the applicant, the NJDEP, and interested recreational fishing organizations to develop a comprehensive public access plan that would better address the recreational needs in the project area. A recreational use and access plan would be consistent with public access policies and regulations (Coastal Zone Management Act of 1972 (86 Stat. 1280; 16 U.S.C. 1451-1464). The Service is available to assist in the development of a public access plan. (OS-AJ-10)

Response: *Although the NRC staff agrees with the U.S. Fish and Wildlife Service that development of a recreational use and access plan would likely benefit anglers and address recreational needs in the area, the requirement to develop such a plan is outside the scope of the NEPA-mandated environmental review for license renewal. The comment will not be evaluated further.*

A.1.7 Comments Concerning Human Health Issues

Comment: We are asked to renew the license for AmerGen, so that they can continue because they're a business. And I understand they want to continue, because they're a business, but we're a community, and we have an obligation to the community. I'm a health care provider in this community, and my obligation is to the children of this community. And this is the reason why I'm here. This is the reason why I spend my days off to come here, because if I'm working in a hospital, if I can save one person's life in a year, to me that's an incredible accomplishment. Shutting this plant down has the potential to save hundreds of thousands of lives in this community for generations and generations to come. This child here was not born at the time the Chernobyl accident happened. This child was born years later, and this is the legacy of nuclear power. This is what happens. This plant, on a daily basis, when everything is working fine, is releasing radiation into the environment. It's releasing it in particulate form. It's

contamination that stays in the environment, and it's not like going and getting an X-ray at the doctor's office where you get zapped one time and then it's gone. This stuff goes into your body, it's built into your bones in the form of strontium-90, it goes in your muscle – and cesium-137. And the science has proven to show this. There's a condition called Chernobyl heart, which develops in children having so much cesium in their heart muscle that they actually develop birth defects. (OS-D-8)

Comment: And I certainly do not want my grandchildren or great-grandchildren to look anything like the picture that the gentleman showed earlier. (OS-K-6)

Comment: I hope this takes a full environmental review. I am sorry I missed your presentation and look forward to hearing more than that. But this needs to be broader than just whether fish die, which is something we clearly are concerned about. It needs to look at the environmental health of people who are affected in the communities as well. (OS-R-7)

Comment: So in addition to daily radioactive emissions, whether or not you consider the Tooth Fairy Study as part of it, I just want to make sure you're really taking a close look at daily emissions. And in addition to that, that's why we're talking about waste issues and security issues, it's because those fall under the general scope of radiation protection. (OS-Q-13)

Comment: The Chemistry Department samples, analyzes, and trends parameters for many of the plant systems. However, as I see it, there are three main reasons that we take the thousands of samples that we do. The first is to protect the public. Almost 80 percent of Oyster Creek's employees live and raise their families in Ocean County. So for us, the public has names and faces. The public is our families, our friends, and our neighbors. There's nothing that we take more seriously than our obligation to protect those that we care about. (OS-AC-1)

Comment: Now there's about 100 or 105 of these plants around the country. None of them have been built since 1977 or so and they were all built in about a 10-year window there. So let's just say the average one is 30 years of age and there's about a 100 of them. That's 3000 operating years of nuclear power stations. And yet, all over the country there's not a single proven cluster of cancer, leukemia, birth defects, or anything else.

At that point in time, people should begin to look at this and say this is safe and clean. Your fears should be put aside. And also, I have to say that the NRC, it's not the same as talking to the IRS or the Department of Justice. The stakes are pretty high here. What is it that they're going to be paid off with for being corrupt? And it just doesn't make any sense. They have to breathe the same air we do. At a certain point in time this ought to be satisfied. I feel people are alarmed by this, they seem to worry about it day in and day out. And I abhor a lot of politicians who further these fears because it looks like they're fighting for their constituents.

I'm standing up for this thing. I have no training in nuclear science, engineering. And I rely upon certain people that do have the training, as we all do throughout our lives. You go to a physician. He tells you that you need this pill or that pill. You're relying upon his training. I have expertise in certain areas and I expect people when they hire me to rely upon me in areas that I have expertise in. So of course, we have to rely upon these people, and I don't believe that they have performed in any way that would bring any doubt upon their character or their ability and I hope that you people will, in fact, find some solace in this and satisfaction that there just isn't anything to base this on. (OS-Y-2)

Response: *The comments are noted. The assessment of human health impacts in the SEIS will determine if the facility is currently limiting and will continue to limit radiological releases to within Federal limits, which are considered protective of the public. Absent new and significant information that would lead the NRC staff to conclude that future operation would result in routine radiological releases in excess of the Federal limits, the NRC staff will not evaluate the effects of low-level ionizing radiation on members of the public. The NRC staff concluded generically in the GEIS that "the significance of radiation exposures to the public attributed to the operation after license renewal would be small." The comments provide no new and significant information and, therefore, will not be evaluated further.*

Comment: In 1976, I was teaching school with another teacher and the area around the plant had to go for tests within a mile and a half. They were being treated with leukemia and this was affecting people. In Vanderbilt and I questioned about it, you know, and everything, the teacher said that the plant was built in 1967 and at the time there was no regulatory data supporting when the plant was built or any type of data regarding requirements, etcetera.

When I started doing the research on it at the time, the plant was supposed to come up for renewal and it kept on coming up for renewal, and I couldn't believe this and what happens is there's a loophole in the clause that grandfathers any previous data does not have to comply with the present data of what has to go into the plant. And when I heard this, you know, and everything, it was really questionable. So I started doing some research about it. And Vanderbilt University, the edu, says the RPHP [Radiation and Public Health Project] research associates from Vanderbilt did a study on it and they said that they had the four nuclear plants in New Jersey listed, and it said they've had considerable radioactivity to the local environment, raising the question of whether local residents have been harmed. And then it goes on with the study. And it says about the research group has investigated this issue as documented facts that suggest such harm is occurring. A number of these findings have been published in peer-reviewed medical journals. Radioactive emissions, the Oyster Creek reactor began operations on May 3, 1969 making it the oldest of the 103 U.S. reactors still in operation. Now this is – I got this off the web in 2001. So you know. The Salem and Hope Creek reactors – it goes on and on. And it says "Oyster Creek emitted 77.0 curies of airborne radioactivity in the period from 1970 to 1993, the largest amount of any U.S. reactors."

And it keeps on going. And it talks about the similarity of the average concentration of radioactive strontium-90 in 222 New Jersey baby teeth is relatively constant after 1980 and then it keeps on going down and it says "Ocean and Monmouth County children, under age 5, is 32.4 percent greater than the U.S. rate and 30.6 percent greater than any other New Jersey counties. Ocean and Monmouth lie directly downwind of the Oyster Creek reactor."

And then it keeps on going down and it says "Cancer mortality in Ocean and Monmouth County children under age 10 was 43.9 percent since the early 1980s, compared to the decline, 35.3 percent and 23.4 percent in the nation and the rest of New Jersey."

And then it keeps on going down about the different kinds of cancers, leukemia, Hodgkin's disease and non-Hodgkin's lymphoma, and multiple myeloma.

And the report keeps on going on and I'm sure if you want to contact the university or whatever, Vanderbilt will still have the report on file and this by the Ph.D. Jay M. Gould, Ph.D., Director; Ernest J. Sternglass, Ph.D., two scientists; Jerry Brown, Ph.D.; Joseph Mangano, MPH, MBA; William McDonnel, MA; Marsha Marks and so on. (OS-AF-1)

Response: *The NRC staff acknowledges that past radiological emissions from OCNGS, particularly in the 1970s, were significantly higher than current levels. The NRC staff's analysis is focused on impacts occurring during the license renewal period. The NRC staff concluded generically in the GEIS that "the significance of radiation exposure to the public attributable to the operation after license renewal would be small." Absent new and significant information that would lead the NRC staff to conclude that future operations during the license renewal period would result in routine radiological releases in excess of Federal limits, the NRC staff will not evaluate the effects of past releases of low-level ionizing radiation on the public. The comment provides no new and significant information and, therefore, will not be evaluated further.*

Comment: My question is, I understand in our previous conversation, that you will be relying on existing studies. Will the Tooth Fairy be part of that review or is any kind of radiation exposure currently part of the environmental review for the plant? (unidentified speaker)

Response: *In 2000, a report entitled* Strontium-90 in Deciduous Teeth as a Factor in Early Childhood Cancer *was published by the Radiation and Public Health Project. The report alleges that there has been an increase in cancer incidence due to strontium-90 released from nuclear power facilities. Elevated levels of strontium-90 in deciduous (baby) teeth were claimed in the report as evidence for the increase in childhood cancer. This study has been largely discredited by the scientific community for a number of reasons, including lack of controls, small sample sizes, and the lack of environmental sampling and analysis (see http://www.nrc.gov/*

reading-rm/doc-collections/fact-sheets/tooth-fairy.html). The assessment of human health impacts in the SEIS will determine if the facility is currently limiting and will continue to limit radiological releases to within Federal limits, which are considered protective of the public. The comment provides no new and significant information and, therefore, will not be evaluated further.

A.1.8 Comments Concerning Socioeconomic Issues

Comment: In addition, Oyster Creek employees are community-minded and generous. Oyster Creek has the largest employee-run United Way campaign in Ocean County. This past year our employees raised more than $180,000 for the United Way. Our employees are involved in the American Red Cross, Juvenile Diabetes Research Foundation, and the American Cancer Society. They are Little League coaches, Girl and Boy Scout leaders, volunteer EMTs and firefighters, and PTA members. We support a variety of family and youth organizations and activities in local communities, and have donated to – land to the community for recreational use. (OS-G-5, OS-G-19)

Comment: Our employees are also involved in many environmental activities in the area, including the World Series of Birding, aiding the Cape May Observatory, and Ocean Nature and Conservation Society, and also the Barnegat Bay Estuary. (OS-G-13, OS-G-27)

Comment: Oyster Creek has donated thousands of dollars to the New Jersey Audubon. (OS-O-1)

Comment: Oyster Creek also supports me and two other members to be on the World Series of Birding every year, which is quite expensive. It's $2000 just to sponsor us to go out and bird, and find all the endangered and threatened species around Ocean County and the state of New Jersey. (OS-O-3)

Response: *The comments are noted. The comments relate to socioeconomic issues and, in general, are supportive of license renewal for OCNGS. The comments provide no new and significant information, and, therefore, will not be evaluated further.*

Comment: Additionally, there are several environmental aspects of this plant, as Suzanne Leta went on, about the cooling towers. We also support only the option of installing cooling towers at this plant and oppose the mitigation factor of wetlands restoration. Tourism is the third largest industry in the state of New Jersey, and Barnegat Bay heavily contributes to that. We need to be looking at what those factors are in determining what the harm is on Barnegat Bay by this plant, and how that's negatively impacting not just the environment but also the economy of the state of New Jersey in terms of the degradation that this plant causes to that important estuary. (OS-R-3)

Response: *The commenter expressed concern that continued operation of OCNGS during the license renewal period may adversely affect Barnegat Bay, which supports a large recreational tourism industry in the State. The NJDEP has the responsibility of implementing the provisions of the Clean Water Act with respect to OCNGS continued operation. The NRC staff is confident that the NJPDES permit issued by the State will adequately protect Barnegat Bay. The comment provides no new and significant information and, therefore, will not be evaluated further.*

Comment: More than 450 families, not including our security personnel, depend on our plant for their livelihood. Of these 450 employees, approximately 250 are members of the International Brotherhood of Electrical Workers, Local 1289. These are good, high-paying jobs with excellent benefits. Our employees are highly skilled and dedicated, and I'm proud to work with them. When I first came to Oyster Creek, a local resident told me, "Run Oyster Creek safely. Do a good job, and, most importantly, keep that plant open, because a lot of my neighbors work there." (OS-G-2, OS-G-16)

Comment: Oyster Creek strengthens our community in so many ways. We are a significant employer and a public – and a positive economic force in the local area. The operation of Oyster Creek adds $52 million to Ocean County. We spend $7.7 million on goods in Ocean County and pay $9.2 million in sales and local taxes every year. We contribute $234 million to Ocean County's domestic product annually, if we value the electrical production that's considered. And we have led the way to $33 million in increased output in Ocean County and $46-1/2 million more in economic output in New Jersey itself every year. (OS-G-4, OS-G-18)

Comment: So what I'm saying here is I don't want to hear that we've got to have this power plant, it's safe and it's good and it's producing a lot of jobs, because the people of Lacey Township are not going to see any difference in their tax structure if that thing closed tomorrow. The reason for that is because the tax law was passed many, many years ago that said if Oyster Creek closes, it does not have an impact on the taxes of Lacey. Let's close it, and let's get it done now. (OS-C-7)

Comment: In addition to that, I took a look at what you do review in terms of the general scoping. The first is you look at, it's called socioeconomics and environmental justice and that is a really, I think a very important part of thinking about environmental health and public health and so I know you look at the evacuation plan annually which I understand. Unfortunately, it does not look at the plan 20 years out and so when you're thinking about socioeconomics and environmental justice you must consider what the population is going to look like 20 years down the line because there are excellent estimates that the census has and if you looked and talked to the towns, that information is available and it will change and it is changing right now. (OS-Q-11)

Comment: However, the other thing you have to take into consideration is you're also going to be probably getting rid of $52 million worth of revenue for Ocean County and it may even cost more. Because if you're hooked up, those houses that are receiving that energy from Oyster Creek, if they get hooked onto the power grid, then they're going to be paying more money for that energy, even if they seem to think it's more environmentally sound. But that's not – that might be a Tooth Fairy issue, actually. Not only will we be paying more for that energy, you probably – it might actually depress the economy a little bit because then there's all these other service industries that are connected to all that. It's something to keep in mind. (OS-X-2)

Response: *The comments are noted and will be considered in the preparation of the SEIS.*

A.1.9 Comments Concerning Alternate Energy Sources

Comment: And I have a question for AmerGen. In 10 years, let's say this plant did become unsafe to operate, I'm sure that they would start taking steps into shutting it down. Now my question to AmerGen would be and you've seen the advertisements on the TV, this new power plant company that's floating around, I believe they're out of Canada, and they're advocating new nuclear power plants. Would AmerGen consider building another plant on that site? I for one would be in favor of it. And I believe that is the future. Coal, fossil fuels, they're not going to last us. Look at what happened with Katrina. The pipelines shut down for a couple of days. Gas went up from $1.90 a gallon to $3 and something a gallon. We can't live with that forever. But nuclear power plants is – maybe not the total solution, but it's the answer today until something else comes along. (OS-U-4)

Response: *Chapter 8 (alternatives) in the SEIS will discuss the relative impacts of alternatives on license renewal, including the impacts of replacing OCNGS generation with a new nuclear facility.*

Comment: When you look at other alternative energies, in the case of wind, solar, and conservation, they can easily make up for it. A gentleman before asked about why Germany had switched. Germany has switched because of safety concerns and because Europe is finding that alternative energies are actually filling the gap. The technology has come of age, and it is working. (OS-D-7)

Comment: Now, we get to this person that was talking about the reactor. It's clean, it's safe, but no carbon. But you've got 3 percent energy and 90 percent waste, nuclear waste, which is worse. What they should be doing is cutting down on some of the – you know, some of the energy we use. (OS-E-5)

Comment: We also took a look at part of our review and alternatives if Oyster Creek would not have its license renewed and another source of electric generation would have to be installed

either here onsite or someplace else to generate 600 megawatts of electricity, and concluded that any other means of generating 600 megawatts would have more of an impact on the environment than continued operation of Oyster Creek. I think one thing we need to keep in mind, though, here is that whatever we do, whether it's generating electricity, driving a car, building a new home, building a new industry, a new plant someplace for people to work, it all has impacts on the environment. And our charge in this is to make sure that we are assessing that and minimizing the impact on the environment to take all of that into consideration. We did that in our review, and we concluded that the impact on the environment of continuing to operate Oyster Creek is the best alternative for continued generation of 600 megawatts. (OS-H-4, OS-H-9)

Comment: That nuclear power – any nuclear power is outdated technology. It's finished. Wind and solar are the new modern technologies. They are clean, they are safe, they are not going to hurt us, even if something goes wrong. The plant has lived out its 40-year life span. Now is the time to let it die. (OS-S-2)

Comment: Then in the future there are definitely ways that we can replace the plant with clean and safe and non-air-pollution-emitting energy generation. The primary source of that is energy conservation and efficiency. I want to give one primary example and that example is an Appliance Efficiency Standards Act that was actually passed this summer, and that act actually puts eight energy-efficient appliances into the market in New Jersey and it actually saves about 300 megawatts of electricity by 2010 across the state. That's about half of what Oyster Creek provides and that's eight appliances only. So I want to make sure that when we're talking about – I know that in this environmental review, part of the review is to take a look at what happens if this plant is not, if the license is not extended and I want to make sure that part of that scope is to look at other clean and renewable alternatives to Oyster Creek because I think that is a critical part that may be missing, unfortunately. (OS-Q-10)

Comment: So I'm just saying to everybody, there are alternatives coming up. At the present time, dark matter is being researched, dark energy. It still has not been containable though yet. So I'm saying to everybody there is future yes. (OS-AF-2)

Response: *The comments are noted. The comments relate to alternative energy development and conservation. Alternatives will be considered in Chapter 8 (alternatives) of the SEIS; they include conservation (demand-side management) and renewable energy sources such as wind and solar energy.*

A.1.10 Comments Concerning Postulated Accidents

Comment: And what we're talking about here is if there is a problem with that plant, and we get a very significant release of radiation, and the consequences of that radiation are Chernobyl

children. These are the children of Chernobyl. These are not statistics. These are people's children. If an accident happens at Oyster Creek, these are going to be the children of our community. These are going to be the children of our community for generations to come.

I also have another picture here. This is the Davis-Besse reactor that was being inspected regularly by the NRC and by the licensee in Ohio. As anybody can see looking at this picture, severe corrosion is occurring on this. However, they didn't seem to think this was a problem and allowed the plant to continue to operate. This is a plant is now old at Oyster Creek. So I think you can understand why the community here has quite a few reservations about the inspection that's going on right now at Oyster Creek. With that said, I'd like to go back to the original question that I asked at the first meeting. And considering how much – the length of time it's been since then, and nobody has gotten back to me about this question, I would hope that you would have the information to answer this question now, because this is not a question that has come to you out of the blue. This is a question that was asked before, and I was told that I would be given an answer.

The question I have is that on March 1st, after restoring the main transformer and restoring the main generator to service at Oyster Creek, a power ascension was in progress when an error resulted in the loss of multiple reactor recirculation pumps, which led an operator to manually scram the reactor. I'd like to add that this was not done very well. It was not controlled well. The water level was not controlled well, and as you go on later in this report that was the conclusion of the NRC inspector. It was also noted that the plant had been overpressurized. And one of the specific questions that I was asking was how many times – from documentation that I've read, it was overpressurized 10 times, the actual reactor vessel. I was asking how many times it had actually been overpressurized, so I was hoping somebody had an answer to that question for me. (OS-D-1)

Response: *The environmental review does consider postulated plant accidents that might occur at OCNGS during the license renewal term. As a result, the impacts of accidents are considered within the scope of the environmental review for license renewal and will be addressed in the SEIS.*

With respect to a Chernobyl-type accident at a U.S. nuclear power plant, U.S. reactors have different plant designs, larger shutdown margins, robust containment structures, and operational controls to protect them against the combination of errors that led to the accident at Chernobyl. Although the NRC has always acknowledged the possibility of major accidents, its regulatory requirements provide adequate protection, subject to continuing vigilance, including review of new information that may suggest weaknesses. Assessments in light of Chernobyl have indicated that the causes of the accident have been adequately dealt with in the design of U.S. commercial reactors. A Chernobyl-like accident is outside the scope of license renewal for U.S. commercial reactors and will not be evaluated in the SEIS.

The reactor vessel head corrosion event at the Davis-Besse Nuclear Plant is an operational issue and is also outside the scope of license renewal. The event has had, and continues to have, a significant effect on both the NRC and reactor licensees. The corrosion was discovered by the licensee during an NRC-required inspection resulting from safety concerns related to reactor vessel head nozzle circumferential cracking. Since the discovery of the reactor vessel head corrosion event at Davis-Besse, the NRC has significantly increased the oversight of licensee reactor vessel head activities and other activities that may affect the condition of the reactor vessel head. Almost immediately after the discovery, the NRC strengthened reactor vessel head inspections with the imposition of inspection requirements by order. The immediate initiatives by the NRC staff provide assurance that any further corrosion events will be identified early and corrected. The NRC also formed a Lessons Learned Task Force (LLTF) to carefully review the Davis-Besse incident and make recommendations for improvement. The LLTF has made recommendations for improvements in reactor vessel inspection requirements, inspection program management and inspector qualification, handling of operating experience information, and research activities relating to leakage detection methodologies. The NRC is confident that the implementation of the LLTF recommendations will preclude any future recurrence of reactor vessel head corrosion similar to that at Davis-Besse.

Reactor overpressurization events are also outside the scope of the environmental review for license renewal. The event referred to at OCNGS actually involved an excessive reactor cooldown that occurred following an automatic reactor scram due to a low water level condition on November 15, 2000. During scram recovery, the reactor experienced an initial cooldown rate of 111 degrees (Fahrenheit) per hour, which exceeded the technical specification (TS) limit of 100 degrees per hour. The TS bases consider 10 cooldowns exceeding 300 degrees per hour to be acceptable during the lifetime of the facility to ensure calculation assumptions used to determine reactor vessel component fatigue limits. AmerGen's records indicate that OCNGS has no occurrences of cooldowns exceeding the 300 degrees per hour limit. OCNGS has exceeded the 100 degree cooldown rate twice in the plant's history, on December 29, 1972, and again on November 15, 2000. The comment will not be evaluated further.

Comment: And the second question that I had is they put out this report to talk about normal boiler loss of approximately three-quarters of a gallon per minute. Now, my question is: if you've got a reactor that's leaking, and it's considered a normal part of its operation, releasing three-quarters of a gallon per minute, where is this water going? What kind of corrosion is it producing? How is this realistically being monitored? And not just with visual inspections.

As we can see from Davis-Besse, it didn't work, because that reactor was so corroded through it was basically an act of God that kept it from going critical. How is this corrosion being monitored effectively? And not just with visual inspections, but actual testing of materials.

And also, where is this water going? Where is this being admitted? Where is this radiation going? I mean, I know it's part of normal operation of a nuclear reactor to be releasing

radioactivity into the environment, and I'm concerned that this is not being properly monitored and checked. (OS-D-2)

Response: *Leakage from the reactor coolant system is an operational issue and is outside the scope of license renewal. The leakage rate from the reactor coolant system is limited by a TS to 5 gallons per minute (gpm) for "unidentified" leakage and 20 gpm for "identified" leakage. The allowed leakage rates are based on the predicted and experimentally observed behavior of cracks in pipes and on the ability to make up coolant system leakage in the event of a loss of offsite power.*

The dry-well floor drain sump and equipment drain tank provide the primary means of leak detection and collection. Identified leakage is that from valves and pumps in the reactor system and from reactor vessel head flange gasket. Leakage through seals of this equipment is piped to the dry-well equipment drain tank. Leakage from other sources is classified as unidentified leakage and is collected in the dry-well sump.

Reactor coolant system leakage is continuously monitored and is trended to ensure that unidentified leakage is identified, analyzed, and corrected in a timely manner. The amount of leakage is determined by recording the amount of liquid pumped out of the dry-well equipment drain tank and the dry-well sump. This liquid waste is sent to the radioactive waste processing system where it is filtered and recycled for use as makeup water for the plant. Any release to the environment would be monitored and included in the Annual Radioactive Effluent Release Report. The comment will not be evaluated further.

Comment: Actually, I'd like to start by clarifying a couple of things. The first thing I was clarifying is the gentleman stated before that there are no Chernobyl-style plants operating in the United States. Although this is true with the graphite reactor, the one that they were operating was closed down. The point is not the type of reactor. The point is the type of accident that can come from it, and that type of accident is a massive radiation release. And these are the – this is what is going to cause a Chernobyl-like incident. It's not necessarily a fire, but if Oyster Creek – because of its age, does have a catastrophic release of radiation, the plant in Chernobyl is only two years old. Oyster Creek has far more radiation there. So even a significant percentage of that would be catastrophic to the environment. (OS-D-3)

Comment: I think when we talk about environmental effects, the big environmental effect that scares me, and should scare all of us, is what happens if it really goes wrong. And it worries me terribly that we're taking an old, obsolete plant and saying, "Let's put 20 more years on it." (OS-K-3)

Response: *The environmental review does consider postulated plant accidents that might occur during the license renewal term. It also includes a review of the alternatives to mitigate*

severe accidents if this has not previously been evaluated for the applicant's plant. The purpose of this consideration is to ensure that plant changes (i.e., hardware, procedures, and training) with the potential for improving severe accident safety performance are identified, evaluated, and, if appropriate, implemented. As a result, the impacts of accidents are considered within the scope of the environmental review for license renewal and will be addressed in the SEIS.

Comment: How does that accident mitigation – how does that play into the environmental scoping process? (OS-Q-5)

Response: *An analysis of severe accident mitigation alternatives (SAMAs) is included as part of the environmental review of the application for license renewal if it had not been considered earlier for the facility. The SAMA review is an evaluation of alternatives to mitigate severe accidents. Severe accidents are those that could result in substantial damage to the reactor core, whether or not there are serious offsite consequences. The NRC staff reviews and evaluates SAMAs to ensure that changes that could improve severe accident safety performance are identified and evaluated. Potential improvements could include hardware modifications, changes to procedures, and changes to the training program.*

In some cases, SAMAs may have already been evaluated by the NRC staff in a previous EIS, supplement, or environmental assessment (EA) written for a facility before the applicant applied for license renewal. In such cases, the evaluation does not have to be repeated for that particular facility, according to NRC regulations in 10 CFR 51.53. However, if the NRC staff has not previously evaluated SAMAs for an applicant's plant in an EIS, a supplement, or an EA, the license renewal applicant is required to consider alternatives to mitigate severe accidents as part of the license renewal application. AmerGen has submitted a SAMA evaluation for OCNGS as part of its license renewal application.

The outcome of the SAMA analysis is a list of plant improvements that meet the criteria of being cost-beneficial, provide a significant reduction in total risk, and are associated with aging effects during the period of extended operation.

In some cases, however, the review leads to a determination that there are no specific SAMA candidates that are cost-beneficial. This may be the case where there is a low residual level of risk and where the applicant has, in fact, already implemented many plant improvements. In other cases, a SAMA that is potentially cost-beneficial may not relate to adequately managing the effects of aging during the period of extended operation. Such SAMAs need not be implemented as part of the license renewal pursuant to 10 CFR Part 54.

A.1.11 Comments Concerning Uranium Fuel Cycle and Waste Management

Comment: The second question is: what are the requirements of nuclear regulatory as far as encasing the spent fuel rods? Are there specific things at Yucca Mountain that they are required to do, which is we can't – and I understand a lot of the points of spent fuel rods is not in – is the transportation of those to Yucca Mountain. What are the regulations for encasement? (OS-B-2)

Response: *Requirements for dry cask storage and transportation are outside the scope of license renewal. During dry cask storage and transportation, spent nuclear fuel must be "encased" in NRC-approved casks. An NRC-approved cask is one that has undergone a technical review of its safety aspects and been found to meet all of the NRC's requirements. These requirements are specified in 10 CFR Part 72 for storage casks and 10 CFR Part 71 for transportation casks. Regulations that govern disposal of high-level radioactive waste in a potential geologic repository at Yucca Mountain, Nevada, are provided in 10 CFR Part 63. The comment provides no new and significant information and, therefore, will not be evaluated further.*

Comment: I'd like to know how many spent fuel rods are now stored onsite, and how many are we generating in a yearly process? (unidentified speaker)

Response: *Although outside the scope of license renewal, at the time of the scoping meetings, there were 976 spent fuel assemblies loaded in 16 dry storage casks at the OCNGS site, and 1992 assemblies stored in the spent fuel pool. OCNGS is on a 24-month refueling cycle, with about 180 spent fuel assemblies discharged to the pool during each refueling. Each assembly weighs approximately 600 lb, and of that weight about 500 lb is actual uranium fuel.*

Comment: Presently, there is no permanent safe storage of nuclear waste, so rather than continue to produce this toxic by-product, the plant should be shut down. (OS-I-3)

Comment: Furthermore, please add to the record that the Federal Government should not subsidize the new construction of nuclear plants until the problem of safe storage of nuclear waste is solved, an issue not covered by the new energy bill passed by the Congress. (OS-I-8)

Comment: The particular concern – and this is not just here in this area, but having read about it in the newspapers – is our utter and complete failure after all of these years to come up with any solution, reasonable solution, to what to do with the rods that are left, the things that are so completely contaminated, so heavily contaminated. And we kept hearing – you know, I'm not young, so I've been hearing for years and years and years how they're going to solve this problem. Well, we're no closer to it now than we were 30, 40, 50 years ago. And what we are a lot closer to is all, and I mean all, those rods that are right up the road apiece. And so I am

very frightened about those. We keep adding more and more to them with no – no – nothing in sight of getting rid of them. (OS-K-4)

Comment: Our number one problem is not radiation from the atomic power plant. It's how to get rid of – we have to get the Federal Government to start moving on disposal of the fuel rods. That is a major priority that's the Federal Government's responsibility that they should take on, not these people. (OS-B-4)

Comment: You can mount this under a fault, and those tanks will only hold highly radioactive radiation for 10,000 years, at most. So some of this radiation doesn't go away for billions of years. Then, you've got the radiation, you've got the – it's really hot stuff, this radiation. If they ever lose water from it – I'm telling you what is going to happen here. You know this. You know it, and you speak it, because you're dealing with a genocide. You don't understand. (OS-E-1)

Comment: Our biggest concern right now is that the NRC refuses to look at the solid waste problem and the evacuation problem as a legitimate concern within the scoping process. They keep saying that that's an everyday issue. We say that's an everyday issue that every day they don't take care of. So, therefore, it's a now issue, yes, but it's an ongoing issue that isn't being taken care of.

In terms of the nuclear waste, if anything should be considered in an environmental scoping meeting, it's that waste that is not being disposed of, that is dangerous as it sits there now. Even going to the casks, the cement casks, no one really knows how those will hold up. There is talk that 300 years they will probably start leaking.

In terms of Yucca Mountain, even if they ever do open that up, which it looks like they won't, there will be so much nuclear waste at all of the plants that we don't even know if ours will get there. A nuclear waste dump in New Jersey, which is what we're talking about, is what will happen – it is that way now, and it will continue to get worse the more we make. How can an industry claim to be moral and community-oriented when they produce a deadly substance where there is no known disposal for anywhere on this earth? No one can find it.

Somebody asked the reason that Germany is getting off nuclear, or wants to get off nuclear, as the U.K. would like to, too, since they had that terrible accident at the nuclear processing plant. The reason they're getting off it is because there is no place to dispose of this stuff. They are finding out that renewable energy is getting cheaper and cheaper, when you consider the billions of dollars that go into subsidizing the nuclear energy field. (OS-P-1)

Comment: I think there are clear problems involved with the way that the NRC looks at license extensions, and, number one, they don't take a look at waste. You think of it as an ongoing

issue. But there's going to be 20 more years of it. And looking that far into the future, unfortunately, is not part of that process. (OS-Q-3)

Comment: And when they get to Yucca Mountain, they put the high, long-lived radiation, they put that in Yucca Mountain in carbon steel – in tanks that last 10,000 years, they say. And then, they say it could deteriorate in 300 years, and it doesn't go away. So you keep on putting more fuel rods there, more radiation. Where are you going to put it? As soon as they go there, if they go there – they probably will – they have to already make a – already did make plans with the Indian reservations there to put it in the land there. Radiation doesn't go away. It decays. It has to decay to go away into another element, and some of that could be short-lived, some of that could be billions of years. And you're going to be sick, and your children are going to be sick. (OS-E-3)

Comment: I wanted to ask about two things and because when I spoke in July, August, I'm sorry, the months are going into each other, there was a concern for me about the spent fuel rods. And at that particular meeting the NRC said that they felt that the – based upon what was happening with Yucca Mountain that these rods could stay where they were. I want to know what is the Federal plan or the NRC's plan and how is it justified that more of these fuel rods can be generated when the existing rods are still there and with the burgeoning population and all of these other things, we don't have a plan. And do you have a foreseeable plan? Do you have an idea how many years the rods that are already there going to be there and generating more. What's that going to create in terms of what I would have a real concern about? (OS-AA-2)

Comment: How can they use Yucca Mountain when Nevada doesn't want those – if they don't want –. (unidentified speaker)

Response: *The safety and environmental effects of long-term storage of spent fuel onsite have been evaluated by the NRC, and as set forth in the Waste Confidence Rule (Federal Register, Volume 40, page 34658 [49 FR 34658], 55 FR 38474, and 64 FR 68005), the NRC generically determined that such storage could be accomplished without significant environmental impact. In the Waste Confidence Rule, the Commission determined that spent fuel can be stored onsite for at least 30 years beyond the licensed operating life, which may include the term of a renewed license. At or before the end of that period, the fuel would be moved to a permanent repository. The GEIS is based upon the assumption that storage of the spent fuel onsite is not permanent. The SEIS regarding license renewal for OCNGS will be based on the same assumption.*

The Commission has determined that the comprehensive regulatory controls that are in place and the low public doses that have been incurred ensure that the radiological impacts on the environment will remain small during the term of a renewed license. The Commission also

concluded that there is reasonable assurance that sufficient low-level waste disposal capacity will be available when needed for facilities during the license renewal period as well as during decommissioning. The comments provide no new information and, therefore, will not be evaluated further.

Appendix B

Contributors to the Supplement

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Contributors to the Supplement

The overall responsibility for the preparation of this supplement was assigned to the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC). The supplement was prepared by members of the Office of Nuclear Reactor Regulation with assistance from other NRC organizations, Argonne National Laboratory, Pacific Northwest National Laboratory, and Information Systems Laboratories, Inc.

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Appendix C

Chronology of NRC Staff Environmental Review Correspondence Related to the AmerGen Energy Company, LLC Application for License Renewal of Oyster Creek Nuclear Generating Station

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Chronology of NRC Staff Environmental Review Correspondence Related to the AmerGen Energy Company, LLC Application for License Renewal of Oyster Creek Nuclear Generating Station

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) and AmerGen Energy Company, LLC (AmerGen), and other correspondence related to the NRC staff's environmental review, under Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51), of AmerGen's application for renewal of the Oyster Creek Nuclear Generating Station (OCNGS) operating license. All documents, with the exception of those containing proprietary information, have been placed in the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, and are available electronically from the Public Electronic Reading Room found on the Internet at the following web address: http://www.nrc.gov/reading-rm.html. From this site, the public can gain access to the NRC's Agencywide Document Access and Management Systems (ADAMS), which provides text and image files of NRC's public documents in the Publicly Available Records (PARS) component of ADAMS. The ADAMS accession numbers for each document are included below.

July 22, 2005	Letter from AmerGen to NRC, forwarding the application for renewal of the operating license for OCNGS, requesting an extension of the operating license for an additional 20 years (Accession No. ML053050477).
July 29, 2005	Letter from NRC to AmerGen, "Receipt and Availability of the License Renewal Application for the Oyster Creek Nuclear Generating Station" (Accession No. ML052100022).
September 9, 2005	Letter from NRC to AmerGen, transmitting "Determination of Acceptability and Sufficiency for Docketing, Proposed Review Schedule, and Opportunity for a Hearing Regarding the Application from AmerGen Energy Company, LLC, for Renewal of the Operating License for the Oyster Creek Nuclear Generating Station" (Accession No. ML052520034).

September 16, 2005	Letter from NRC to AmerGen, forwarding the *Federal Register* Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping in Support of the Review of the License Renewal Application (Accession No. ML052590296).
October 12, 2005	Letter from NRC to Mr. Clifford Day, U.S. Fish and Wildlife Service (FWS), New Jersey Field Office, "Request for List of Protected Species Within the Area Under Evaluation for the Oyster Creek Nuclear Generating Station License Renewal" (Accession No. ML052870166).
October 12, 2005	Letter from NRC to Ms. Patricia A. Kurkul, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, Northeast Regional Office, "Request for List of Protected Species and Essential Fish Habitat Within the Area Under Evaluation for the Oyster Creek Nuclear Generating Station License Renewal" (Accession No. ML052870502).
October 12, 2005	Letter to Mr. Robert Chicks, President, Stockbridge-Munsee Community, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Oyster Creek Nuclear Generating Station (Accession No. ML052900227).
October 12, 2005	Letter to Mr. Brice Obermeyer, Native American Graves Protection and Repatriation Act (NAGPRA) Director, The Delaware Tribe, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Oyster Creek Nuclear Generating Station (Accession No. ML052870572).
October 12, 2005	Letter to Ms. Tamara Francis, NAGPRA Director, Delaware Nation of Western Oklahoma, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Oyster Creek Nuclear Generating Station (Accession No. ML052870571).
October 12, 2005	Letter to The Honorable Mark Gould, Tribal Chairman, Nanticoke Lenni-Lenape Indians of New Jersey, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Oyster Creek Nuclear Generating Station (Accession No. ML052870563).

October 12, 2005	Letter to The Honorable Joe Brooks, Chief, Delaware Tribe of Indians, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Oyster Creek Nuclear Generating Station (Accession No. ML052870553).
November 9, 2005	Letter to AmerGen from NRC, "Request for Additional Information (RAI) Regarding Severe Accident Mitigation Alternatives (SAMAs) for Oyster Creek Nuclear Generating Station" (Accession No. ML053130387).
November 15, 2005	Letter from Barnegat Bay National Estuary Program to NRC regarding environmental review of Oyster Creek Nuclear Generating Station (Accession No. ML053220253).
December 8, 2005	"Summary of Public Scoping Meetings Regarding the Review of Oyster Creek Nuclear Generating Station License Renewal Application" (Accession No. ML053430247).
December 8, 2005	Letter to AmerGen from NRC, "Request for Additional Information (RAI) Regarding the Environmental License Renewal Review for the Oyster Creek Nuclear Generating Station" (Accession No. ML053430198).
January 9, 2006	Letter from AmerGen to NRC "Response to NRC Request for Additional Information Related to Severe Accident Mitigation Alternatives (SAMA) for Oyster Creek Generating Station" (Accession No. ML060130238).
January 30, 2006	Letter from New Jersey State Representatives L.T. Connors, Jr., C.J. Connors, and B.E. Rumpf to NRC regarding constituent's concerns about fish kills (Accession No. ML060730108).
February 21, 2006	Letter from NRC to AmerGen, "Issuance of Environmental Scoping Summary Report Associated with the Staff's Review of the Application by AmerGen for Renewal of the Operating License for the Oyster Creek Nuclear Generating Plant" (Accession No. ML060530691).
March 2, 2006	Letter from AmerGen to NRC, "Correction of Minor Errors in the Oyster Creek Generating Station License Renewal Application" (Accession No. ML060660177).

March 8, 2006	Letter from AmerGen to NRC, "Response to NRC Request for Additional Information Regarding the Environmental License Renewal Review for the Oyster Creek Generating Station" (Accession No. ML060720126).
March 13, 2006	Letter from NRC to L.T. Connors, Jr. regarding constituent's concerns about fish kills (Accession No. ML060720453).
March 15, 2006	Letter from AmerGen to NRC, "Clarifications to Responses to NRC Request for Additional Information Related to Severe Accident Management (sic) Alternatives (SAMA) for Oyster Creek Generating Station" (Accession No. ML060760379).

Appendix D

Organizations Contacted

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During the course of the U.S. Nuclear Regulatory Commission staff's independent review of environmental impacts from operations during the renewal term, the following Federal, State, regional, local, and Native American Tribal agencies were contacted:

Barnegat Bay National Estuary Program, Toms River, New Jersey.

Delaware Nation of Western Oklahoma, Anadarko, Oklahoma

Delaware Tribe of Indians, Bartlesville, Oklahoma

Lacey Township, New Jersey

Nanticoke Lenni-Lenape Indians, Bridgeton, New Jersey

National Marine Fisheries Service, Gloucester, Massachusetts

New Jersey Department of Environmental Protection, Trenton, New Jersey

New Jersey Department of Environmental Protection, Bureau of Nuclear Engineering, Trenton, New Jersey

New Jersey Department of Environmental Protection, Endangered and Non-game Species Program, Trenton, New Jersey

New Jersey Department of Environmental Protection, Historic Preservation Office, Trenton, New Jersey

New Jersey Pinelands Commission, New Lisbon, New Jersey

Ocean County, Department of Planning, Toms River, New Jersey

Stockbridge-Munsee Community, Bowler, Wisconsin

The Delaware Tribe, Emporia, Kansas

U.S. Fish and Wildlife Service, Pleasantville, New Jersey